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DISEASES OF THE SALIVARY GLANDS

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The secretions of the oral cavity are derived from a number of secretory glands, the parotid, submaxillary and sublingual glands; the glands of Blandin and Nuhn, the palatal glands, Moore glands and a number of small mucus-secreting units situated in the floor of the mouth and the buccal surfaces of the cheeks.

For practical purposes I may limit my consideration to the parotid and submaxillary glands. These are the two chief structures which enter into my discussion because they are the ones most frequently affected by pathologic conditions which come to the attention of the otolaryngologist. The sublingual glands are of lesser significance. Aside from the fact that they may enter into a somewhat vicarious form of ranula, they hold little interest for the otolaryngologist. Occasionally a cyst of one of the sublingual glands will become obstructed, causing a myxomatous degeneration and a swelling in the floor of the mouth which has been called ranula. This, however, is not a true ranula. The ranula is of teratologic origin and represents heterotopias or ectopias of pharyngeal mucosa as observed in the branchial cysts. A microscopic section through the wall of a congenital ranula arising from the second branchial arch reveals a characteristic admixture of stratified and columnar epithelium in contrast to mucous membrane observed in those cysts produced by a myxomatous degeneration of a gland in the floor of the mouth.

SIALOLITHIASIS

A common cause of acute infection in the salivary glands is the presence of a salivary calculus. The influences responsible for a salivary stone are not fully recognized, although in some instances the calculus can probably be ascribed to inflammatory reactions within the gland. The infected gland thus furnishes a changed secretion which favors the precipitation of elements responsible for the calculus. Perhaps in some cases foreign bodies serve as a nucleus for formation of the stone. It has been reported in the literature that ductogenic actinomycosis may be the factor responsible for a salivary calculus. This theory, however, does not seem to be plausible in view of the fact that salivary stones frequently occur in horses, but these animals are never affected by actinomycotic infections. More-

over, one never observes salivary stones in cattle, which are so often affected by this disease.

Salivary calculi usually originate within the gland structure in the form of small concretions which are carried along with the salivary current to become lodged in the gland duct. Here they become enlarged by deposits of bacteria and phosphates. Any of the salivary glands or ducts may be the site of calculus formations, but the most frequent location is Wharton's duct, after which, in order of frequency, one finds the stones in the submaxillary glands, the parotid glands and Stensen's ducts.

Signs and Symptoms.—The degree of symptoms depends on the size and location of the stone. If it lies within the gland structure, the patient may experience only a mild intermittent feeling of irritation and discomfort in the affected region together with moderate swelling. If, however, the stone is in the duct the symptoms may be severe, characterized by a sudden sharp pain when the salivary flow is stimulated and rapid, and painful distention of the gland. In the course of twelve to forty-eight hours an inflammatory reaction may occur, due to the retention of infected secretions. Pus may be found in the floor of the mouth, together with swelling of the tissues along the course of the duct with deviation of the protruded tongue when the submaxillary gland is involved. General reactive symptoms, malaise and fever are occasionally in evidence. The floor of the mouth may be dry, and frequently no saliva will be found flowing from the obstructed duct when the patient is asked to suck a piece of lemon. Palpation of the duct may express pus or reveal the location of the stone.

When the calculus is in a salivary gland, a probe passed into the duct fails to locate the stone. In these cases the most useful data are supplied by a roentgenographic examination of the gland. If the calculus is large enough to cause obstruction and particularly when it contains calcium salts as its chief constituent, it is usually demonstrable in a roentgenogram.

Treatment.—Treatment varies with the stage of the condition. When a gland is acutely inflamed, palliative therapy until the acute inflammation has subsided is, I believe, the procedure of choice. This is accomplished by the administration of sulfadiazine and penicillin, hot irrigations of the mouth and external dressings, hydration, suberythema doses of roentgen rays and gentle probing of the duct. The latter may produce sufficient dilatation of the duct to cause a spontaneous expulsion of the stone.

During the interval between acute inflammatory reactions the stone should be removed surgically. A 2 per

cent solution of procaine hydrochloride is injected about the papilla of the duct and along its course posteriorly to the region of the calculus. The papilla is then grasped and cut off. This procedure greatly facilitates the introduction of a probe into the duct. The duct is then split open along the probe with a knife or canaliculus scissors until the stone is reached and removed with a forceps or curet.

The intraoral approach is obviously the one of choice. It is a simple procedure, devoid of complications, and can be safely executed without the danger of producing a salivary fistula. The operative wound in the floor of the mouth need not be closed by sutures. The wound heals kindly and the duct rehabilitates itself with normal patency and perfect function, even though its papilla is removed and its walls are extensively damaged in the manner described.

Occasionally the presence of a stone or multiple stones within the submaxillary gland, associated with a chronic inflammation, gives rise to the necessity of removing the entire submaxillary gland. This can easily be accomplished by an external approach, although one must have proper respect for the hypoglossal nerve, which may come within the field of operation if the excision is carried for any appreciable distance mesially and posterior to the gland. In the vast majority of cases, however, the stone can be removed by the intraoral route, a procedure which is to be advocated when feasible. Medicamentous stimulation of salivation in order to promote the expulsion of fragments of stone is usually not successful. It frequently causes pent-up secretions within the glands, with pain and the risk of a secondary infection.

THE PAROTID GLAND

Inflammations of the parotid gland may arise from three sources: (1) parotid infections resulting from foreign bodies in the duct, particularly the salivary calculus; (2) abscesses occurring as a complication of abdominal operations, and (3) inflammatory disease arising as a result of direct extension from neighboring infections.

When stone in Stensen's duct is responsible for infection in the parotid gland it can be removed by the intraoral route as described for stone in the duct of the submaxillary gland. Stensen's duct is probed and split open until the calculus can be grasped and recovered. The duct mends and restores its patency in a phenomenal manner and the risk of producing a salivary fistula is of no concern. I have never found it necessary to excise the entire parotid gland for multiple calculi and their associated inflammatory reactions, although the literature refers to several cases of recurring phlegmonous processes which called for the total extirpation of the parotid gland at the cost of destroying the facial nerve. In a few instances, however, I have made several incisions into the parotid gland for the removal of multiple calculi, and fortunately the patients thus treated went on to satisfactory recoveries. It is only necessary to reflect the skin and subcutaneous tissue from the parotid gland, identify the stones by palpation, incise the gland to expose them and thus effect their removal. The facial nerves are deeply situated in the tissues of the parotid gland so that it is possible to do considerable damage to the superficial structures without danger of injuring the fibers of the nerve. Every

effort should be made to tease out the various divisions of the facial nerve and protect them when possible. It is interesting to note how extensively the parotid gland may be excised with preservation of the important branches of the facial nerve. In a number of instances I have removed the entire parotid gland which was the seat of infiltrating tumors without serious injury to the main divisions of the seventh nerve.

Sir William Osler¹ in 1902 called attention to the occurrence of inflammation of the parotid gland "in connection with injury or disease of the abdomen or pelvis." No explanation was offered, but in the light of recent studies on water balance, it is highly probable that the etiologic influence was dehydration. I have never seen a parotid abscess develop in a patient whose fluid requirements were adequately fulfilled. The parotid gland, devoid of a protective flow of secretions, may become infected by a retrograde extension of mouth organisms through the duct, particularly in the presence of septic oral cavities.

One must also call attention to another possible etiologic factor in this group of patients: namely, the injury that may be done to the parotid gland by the anesthetist who forcibly holds the jaw forward during anesthesia. Firm pressure back of the ramus of the mandible for an hour or more may injure the parotid gland and devitalize it to the extent that it becomes a fertile soil for the growth of infection.

I need not describe the anatomic relationships of the parotid gland and particularly its intimate association with the pharyngomaxillary fossa. Through this space the inner prolongation of the parotid gland (carotid lobe) is open to infection on all sides. By this route infections of the cervical vertebrae and inflammatory processes which originate in the peritonsillar and retropharyngeal regions may invade the parotid gland. By the same token, infections originating in the parotid gland, possibly secondary to a furunculosis of the external auditory canal, may extend medially through the carotid lobe to the pharyngomaxillary fossa and thence to the region of the pharynx.

Treatment.—The use of the sulfonamide compounds and the antibiotics has greatly altered the course and prognosis of inflammation of the parotid gland. Seldom does this lesion eventuate in the formation of an abscess which requires surgical intervention. When incision is indicated, however, massive drainage of the gland is advocated. This can be obtained by an incision which begins above at the level of the zygoma and extends downward in front of the external auditory canal, parallel with the ramus of the jaw and forward beneath the angle for a distance of 2 or 3 cm. along the inferior margin of the mandible. The skin and subcutaneous tissues are reflected forward, thus exposing the entire lateral surface of the gland and facilitating massive drainage of this structure.

Another important factor in the treatment of parotid abscess is hydration. The average adult person requires approximately 3,500 cc. of fluid in twenty-four hours and it is important that the patient be given this quantity in order to promote normal functions of the excretory organs of the body. If the patient is not receiving an adequate supply of fluid each day by mouth, it should be administered by the intravenous route.

1. Osler, W.: *Principles and Practice of Medicine*, New York, D. Appleton and Company, 1892.

5 per cent solution of dextrose serves the purpose well. Other palliative measures of doubtful value are hot external dressings, suberythema doses of roentgen rays, gentle probing of the duct and diathermy for the relief of pain.

Certain chronic conditions occasionally involve the salivary glands. Syphilis is a rare occurrence. A few cases have been reported in which the glands were the seat of tertiary manifestations of the disease. The diagnosis was based on a serologic examination, evidences of tertiary syphilis elsewhere in the body and therapeutic tests in some instances.

It is now considered that Boeck's sarcoid, osteitis tuberculoidea multiplex cystoides, uveoparotid fever and certain cases of Mikulicz's syndrome are representative of a noncaseating tuberculosis with variable combinations of clinical symptoms. The demonstration of tubercle bacilli, microscopic evidence of typical tubercles without caseation, the occasional transformation of these lesions into a caseating tuberculosis, serologic data and the similarity between sarcoid reactions in human beings and in certain animal species are obviously arguments in favor of a tuberculous causation.

Actinomycosis of the salivary glands may occur as a secondary infection from the mouth. It is characterized by a chronic inflammatory swelling at the angle of the jaw or in the cervical region with the formation of numerous sinuses which discharge pus. Examination of the pus reveals the typical sulfur granules which when compressed between cover glasses and examined microscopically show the ray fungus of actinomycosis. While radical excision or cauterization of the inflammatory mass, roentgen therapy and the administration of potassium iodide have been the sovereign remedies, many of the lesions promptly recover by the use of sulfadiazine and penicillin. These agents have obviously greatly altered the therapy and prognosis of this lesion.

I cannot pass by without simple mention of the occasional patient who reveals an organic lesion responsible for a dysfunction of the salivary glands. The patient complains of a dry mouth. The mucous membrane is parched, a wooden tongue blade drawn over the mucous membrane meets the resistance of a sticky surface, the tongue may appear desiccated with thin crusts on its dorsum and pressure on the glands reveals little or no saliva. Even when the patient is asked to suck a piece of lemon salivation does not occur.

The pathologic change responsible for dysfunction cannot be revealed. Nevertheless, it represents some physiologic disturbance in the end organs of the nerves supplying the salivary glands. Occupational hazards such as exposure to organic dusts and zinc poisoning have been responsible in a few of my patients. Botulinus poisoning was the cause in 1 person.

Pilocarpine therapy is frequently most effective in these cases. Pilocarpine hydrochloride or pilocarpine nitrate is taken orally in 8 mg. doses three times a day. It should be administered before meals in order to promote salivation when it is most needed. The drug seems most effective when the patient is in a mild state of acidosis. Thus it is recommended that the alkalis be restricted in the diet and that the patient be given 3 Gm. of ammonium chloride with meals three days "on" and two days "off" during the uninterrupted administration of the pilocarpine.

TUMORS

The vast majority of neoplasms originating within the salivary glands fall into the classification of the mixed tumors. These lesions obviously are of teratologic origin, caused by some disturbance or irregularity in the mechanics of embryonic development. They frequently put in their appearance during the third or fourth decade of life, grow slowly or not at all for many years and finally burst forth with a flourishing growth which calls for their removal. Their clinical behavior suggests an origin from an embryonal rest, aberrant structures or a superfluous collection of cells.

It is to be emphasized that these lesions are vicious and devastating in their behavior. They appear usually in young adults as a more or less benign lesion which grows insidiously but resolutely in the direction of a malignant neoplasm. I have frequently observed that years after what appeared to be a successful operation for the removal of a mixed salivary tumor the lesion has returned with alterations which were clearly those of a rapidly proliferating malignant neoplasm.

The treatment is surgical. One cannot emphasize too strongly that the fate of the patient lies in the hands of the first surgeon. If he is successful in removing every vestige of the neoplasm, and this can usually be done even though all of the parotid gland must be removed, there is little danger of a troublesome recurrence. The first surgeon must not fail to eradicate the lesion so completely that no portion of it remains in the field of operation.

CONCLUSIONS

The etiologic factors responsible for inflammations of the salivary glands are foreign bodies—particularly the calculus—injury or disease of the abdomen or pelvis and extension of infection from neighboring tissues. Injury and dehydration are also potent influences in the origin and development of infections in these structures.

Effective agents in the therapeutic armamentarium are sulfadiazine and penicillin. Hydration must be instituted and maintained. Wide incision and massive drainage are required when a circumscribed collection of pus is present.

Chronic infective granulomas are rare manifestations of disease of the salivary glands. A noncaseating form of tuberculosis is occasionally observed. The gumma perhaps is more rarely seen. Actinomycosis has responded most satisfactorily in many instances to the sulfonamide drugs and penicillin therapy.

A dysfunction of the salivary glands is occasionally the result of end organ lesions of the peripheral secretory nerves. A normal salivary flow may be produced by the administration of pilocarpine. The effect of the drug is augmented by the simultaneous ingestion of the acid-forming salt ammonium chloride.

The common neoplasm of the salivary glands is the mixed tumor. The soft tumors are more prone to exhibit carcinomatous alterations than the hard, firm ones. They are devastating in their clinical behavior in that they tend to degenerate into rapidly proliferating carcinoma. Surgical intervention which accomplishes the complete removal of the lesion is most successful. When these tumors do recur, however, they usually present frank carcinomatous alterations and further surgical efforts are futile.

ABSTRACT OF DISCUSSION

DR. LEROY A. SCHALL, Boston: Dr. Furstenberg can always be relied on to present a scholarly, scientific paper. It is refreshing to have an otolaryngologist talk about major surgery for the carotid gland. Too often we ship these cases over to the general surgeon, and it should not be. We should be able to take care of anything within our field. I feel that the salivary gland belongs to the otolaryngologist. There is little to discuss in this complete paper of Dr. Furstenberg. With stone in the duct of the submaxillary gland, we have been in the habit of putting a suture behind the stone before we start probing for it, in order to avoid pushing it back into the gland. We, too, remove the submaxillary gland when there have been repeated infections or when there are multiple stones in the submaxillary gland. What he has to say about dehydration is very important, and now when our anesthetists are so persuaded of the value of intratracheal anesthesia, perhaps we shall have fewer cases from forcibly holding the jaw forward. Intratracheal anesthesia, intravenous anesthesia and proper fluid balance, along with the sulfonamide drugs and the antibiotics, may make suppuration of the carotid gland a disappearing disease.

DR. JAMES MILTON ROBB, Detroit: I want to commend my friend, Dr. Furstenberg, on what he has been doing for a number of years, and that is bringing the attention of the otolaryngologist to the care and surgery of the salivary glands. He brings every phase of it to our attention but, as a corollary of his efforts, he also is really saying to us that the methods of general surgery, the methods of a trained surgeon, must be a part of one's efforts, and as our young men are coming along, one of the things that we must do as part of laryngology is have them trained in general surgery so that these measures that he mentions can be satisfactorily carried out.

DR. A. C. FURSTENBERG, Ann Arbor, Mich.: I wish to thank Dr. Schall and Dr. Robb for bringing out the important points that they have emphasized. I want to express my deep appreciation to you for the privilege of appearing here at this time and for the kind indulgence of the members of this section.

PERIPELVIC LYMPHATIC CYSTS OF THE KIDNEY

Report of Two Cases

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Peripelvic cysts of the kidney occur rarely, they are usually small in size and most cases have been noted by pathologists as incidental findings at necropsy. In only a few cases have these cysts caused clinical symptoms, and these were usually large cysts tending to distend the abdomen; their perinephric origin was in most cases recognized only on the operating table or at necropsy. Abbe¹ reported two cysts which were large enough to pass beyond the midline of the abdomen. One contained 2 pints (946 cc.), the other 12 pints (5,678 cc.) of fluid. Albarran and Imbert² reviewed 18 cases reported before 1903. Eight of these patients had been treated surgically, 4 by removal and 4 by drainage. Przewoski³ and Albarran and Imbert, as well as other authors, suggested that the cysts arose from embryonic remnants of the wolffian body. Lüdin and Howald⁴ reported a case in which a small cyst had extended into the kidney from the renal hilus. It was not connected with the pelvis or calices and contained a calcareous deposit that cast a roentgen shadow

suggesting stone. The cyst was opened and the calcareous material removed; healing occurred readily. Shih and Wu⁵ reported a case in which a cyst containing 150 cc. encroached on the lateral wall of the kidney, causing considerable distortion of the kidney. In most reported cases the cysts were unilocular, although Haslinger⁶ reported a multilocular parapelvic cyst 9 cm. in diameter that was attached to the renal pelvis. By pressure on the renal pelvis it produced stasis in the renal pelvis, causing urinary retention and infection. Haslinger thought that the cyst did not arise from the kidney substance proper but developed from a mesonephric rest or was the result of an outpouching or snaring-off of part of the renal pelvis during embryonic life. Lieberthal⁷ reported a similar case in a woman aged 50. An intravenous pyelogram showed a compression of the renal pelvis, an obliteration of the middle calyx and thinning out of the upper and lower calices. At operation a bluish translucent cyst the size of a walnut extended out from the hilus, lying between the renal pelvis and the vascular pedicle. The extrarenal part of the cyst was resected and the cavity wiped out with phenol and alcohol. The wound healed readily, and five months later an intravenous pyelogram revealed a normal renal pelvis.

Henthorne⁸ has recently called attention to the possible lymphangiomatous source of certain of these cysts. He stated that the first and most complete description of these peripelvic lymphatic cysts was given by Rivolta,⁹ who in 1889 reported the lesion found at necropsy on 2 elderly patients. Rivolta recognized that the cysts were lymphatic ectasis and quoted Virchow as authority for the occurrence of an analogous lesion in the human being; namely dilated lymphatics of the female pelvis following puerperal inflammatory disease. Henthorne found 20 such cases in a large series of necropsies. In none of his cases was the cyst of sufficient size to become clinically important. The presence of scars and cortical cysts in most of the kidneys suggests an inflammatory basis for the cysts. In 11 of Henthorne's cases in which the patients were men there was a history or evidence of obstructive, infectious or calculous disease of the kidney. Three of the 4 women had borne children and may have had renal infection during the puerperium. It is also striking that in 8 cases the patients had lesions that generally are presumed to be congenital anomalies; lymphatic ectasia occurred in other organs in 5 of these cases. Henthorne stated that from this fact it is evident, on a statistical basis alone, that the evidence for the congenital origin of peripelvic lymphatic cysts is just as good as the evidence for the inflammatory origin. The fact that the cysts occurred late in life, however, is in favor of an acquired lesion.

I have recently operated on 2 patients both of whom had large peripelvic lymphatic cysts which were of sufficient size to cause distortion of the renal pelvis and to exert pressure on the structures of the renal hilus. These cases are of interest because of the origin and large size of the cysts, their apparent relationship to hypertension and the similarity of the diagnostic signs to those of renal tumors.

Read before the Section on Urology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.
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2. Albarran, J., and Imbert, J.: *Les tumeurs du rein*, Paris, Masson & Cie, 1903.
3. Przewoski, cited by Albarran and Imbert.²
4. Lüdin, M., and Howald, R.: Eine eigenartige, intrarenale Zyste, *Schweiz. med. Wchnschr.* 70: 230-232, 1940.

5. Shih, H. E., and Wu, S. D.: Perirenal Cyst, *Chinese M. J.* 59: 256-258, 1940.
6. Haslinger, K.: Eine multilokulare Nierencyste, *Wien. klin. Wchnschr.* 39: 534-535, 1929.
7. Lieberthal, F.: Multi-Locular Solitary Cyst of the Renal Hilus, *J. Urol.* 42: 321-325, 1939.
8. Henthorne, J. C.: Peripelvic Lymphatic Cysts of the Kidney, *Am. J. Clin. Path.* 8: 28-38, 1938.
9. Rivolta, cited by Henthorne.⁸

REPORT OF CASES

CASE 1.—Mrs. M. R., aged 61, had a "severe" attack of renal trouble nineteen years ago, of several months' duration. For ten years she had felt tired and run down and had frequent attacks of fever, frequency of urination and dysuria; there had been no hematuria. During the last five years she had a fairly constant dull pain in the right renal area and her systolic blood pressure had been elevated; For a year it had been above 180.



Fig. 1 (case 1).—Attenuated, semicircular deformity of retrograde pyelogram (right).

Examination.—A palpable right kidney was found and the blood pressure was 178 systolic and 96 diastolic. The hemoglobin was 80 per cent and the urine contained a few white and red blood cells. The nonprotein nitrogen of the blood was 33 mg. per hundred cubic centimeters of blood. The Kline test was negative in result. Roentgenograms of the chest, gastrointestinal tract, kidneys, ureters and bladder was normal. At cystoscopy mild areal cystitis was found. Both ureters were catheterized without difficulty; the function of the left kidney was normal, that of the right moderately reduced. The pyelogram of the right kidney revealed an attenuated semicircular deformity of the renal pelvis and calices (fig. 1); the pyelogram of the left kidney was normal.

Operation.—The right kidney was exposed through a posterior lateral incision. It was somewhat enlarged and the parenchyma was thinned out, little functioning tissue remaining; a rounded tense mass could be felt in the middle portion. No definite tumor could be made out nor did the organ have the tortuous, dilated, superficial veins usually associated with renal tumors. There was no extrarenal evidence that the lesion was cystic. The pedicle was clamped, cut and tied and the kidney removed. The wound was closed in the usual manner and healed readily. Several days following operation her blood pressure had dropped to 136 systolic and 80 diastolic. One year later it was 140 systolic and 80 diastolic, and she felt exceedingly well. She had no pain, was able to do her housework and had gained 10 pounds (4.5 Kg.) since operation. She had no further symptoms of urinary infection and her urine was essentially normal.

Pathologic Data (Dr. J. H. Kahler).—The specimen consisted of a right kidney which weighed 190 Gm. and measured 9 by 6 by 6 cm. There was a cyst which protruded into the peripelvic fat. It was thin walled and bluish in color. When the kidney was opened the cyst occupied the mid portion of the kidney, and the cortex overlying the cyst was compressed and atrophic, measuring 5 mm. in thickness. There was no

communication between the cyst and the pelvis or calices. It was filled with clear, straw-colored fluid. The lining was thin, smooth and whitish. The calices were slightly dilated. The pelvic mucosa was smooth and glistening and the ureter was small and normal. The cortical markings were distinct and the parenchyma was normal except over the apex of the cyst.

Microscopic Description.—The cyst had a wall composed of collagen fibers, four to five layers thick. Its inner surface was wavy, and only an occasional nucleus was seen in the lining. It is probable that the nuclei were the remains of small endothelial cells which were markedly stretched out. They were similar in appearance to the lining cells of large, dilated lymph vessels (fig. 2). The sections through the pelvis overlying the cyst shows a normal transitional epithelial lining beneath which the stroma is edematous. A section through the middle calyx, the area in which the renal parenchyma was most thinned, demonstrated a decided condensation of the connective tissue at the calyx and compression of the adjacent collecting tubules, in many of which there were blue-staining casts.

Diagnosis.—The diagnosis was peripelvic lymphatic cyst of the kidney (718-064),¹⁰ pyelitis follicularis (719-100) and chronic pyelonephritis (722-100).

CASE 2.—Mr. L. F., aged 57 years, had pain in his left loin occasionally during the previous year; during the previous two months it had been rather severe. There had been no hematuria, frequency or nocturia, though recently he had had some bladder spasm and urgency. During the previous three years his systolic blood pressure had varied from 180 systolic and 100 diastolic to 210 systolic and 120 diastolic.



Fig. 2 (case 1).—Low power photomicrograph (approximately $\times 15$). In the center the peripelvic lymph cyst is seen as a clear space delimited by a single layer of nearly invisible endothelial cells supported by a thin fibrous wall. Loose areolar tissue containing a few vessels separates the cyst from the renal pelvis above and from renal parenchyma below.

Examination.—The patient was a heavy, vigorous man with a florid complexion. The blood pressure was 180 systolic and 100 diastolic. The hemoglobin was 100 per cent, the urine contained a few pus cells and the Kline reaction was negative. The nonprotein nitrogen content of the blood was normal.

10. The classification system used is that of Jordan, E. P.: Standard Nomenclature of disease and Standard Nomenclature of Operations, second edition, Chicago, American Medical Association, 1942.

ams of the chest, kidneys, ureters and bladder dye was seen in the left kidney in the intra-; the right renal pelvis appeared normal. scope the bladder was seen to be normal with line coming from both ureteral orifices. The phenolsulfonphthalein return was normal from the right kidney; that from the left was considerably reduced. A retrograde pyelogram of the left kidney revealed an attenuated, semicircular deformity of the renal pelvis and calices similar to that seen with renal tumor (fig. 3).

Operation.—The left kidney was exposed through a postero-lateral incision. There were many perirenal adhesions which were rather vascular and bled profusely. The kidney was slightly larger than normal, and a tense bluish thin-walled cyst was seen projecting from the renal hilus. The cyst, which was about 4 cm. in diameter, extended downward compressing the pelvis and ureter posteriorly and vascular pedicle in front (fig. 4). In an attempt to free the adhesions around the cyst it was ruptured and brisk bleeding was started which was difficult to control. The renal pedicle was then clamped, cut and tied and the kidney removed. The wound healed without trouble. Directly after operation the blood pressure was 126 systolic and 80 diastolic. During the following four months it had not gone above 136 systolic and 90 diastolic. At this time, at his last examination the patient felt well and had had no further pain or discomfort.



Fig. 3 (case 2).—Filling defect in left-sided retrograde pyelogram.

Pathologic Data (Dr. J. H. Kahler).—The specimen consisted of the left kidney, weighing 175 Gm. and measuring 12 by 7 by 5 cm. The outline of the kidney was normal; the capsule stripped with ease from a smooth pinkish red surface. There were no adenomas or scars. Protruding from the medial aspect of the peripelvic fat there was a cyst which was filled with clear fluid but which was ruptured during removal and which now contained clots from a fairly large bleeding vessel. This cyst,

4 cm. in diameter, had depressed and deformed the middle calix and by pressure slightly dilated the superior calix. The pelvis itself was not enlarged; its mucous membrane as well as that of the calices was thickened and red in color with small hemorrhagic areas. The peripelvic cyst had a smooth lining and a thin almost translucent wall. When the kidney was sectioned the markings were normal; the cortex measured 7 mm. and the medulla 9 mm.

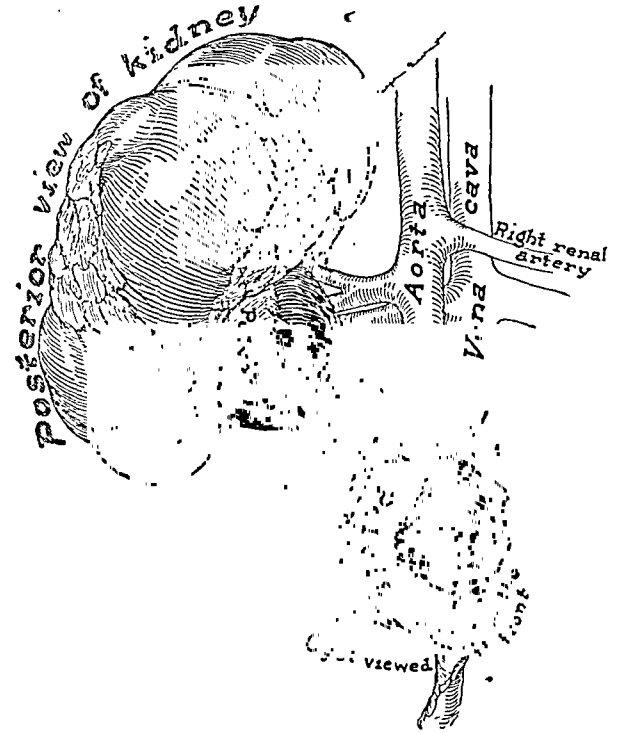


Fig. 4 (case 2).—Peripelvic lymphatic cyst compressing renal pelvis and vascular pedicle.

Microscopic Description.—The cyst had an almost invisible layer of minute endothelial-like cells of which only the nuclei were occasionally visible. The cyst wall was formed in concentric layers of fibrocytes as in the wall of a lymph vessel. The pelvis, on the other hand, was lined by normal epithelium but its wall was decidedly thickened, particularly beneath the serosa, by pronounced edema, foci of hemorrhage and occasional small foci of lymphocytes. The epithelium and subjacent connective tissue of the calices were normal in appearance, while sections of the kidney cortex showed no vascular lesion whatever and the glomeruli appeared entirely normal. However, the tubular epithelium contained some albuminous material mixed with red cells. It is possible that this change was due to the trauma of operation, or it may have followed previous instrumentation.

Diagnosis.—The diagnosis was peripelvic lymphatic cyst of kidney (718-064) and chronic pyelitis (722-100).

COMMENT

The cysts in both cases were exceptionally large for this type of lesion and the kidney was removed in each case. The first patient was elderly and hypertensive; there was considerable destruction of the kidney and it was impossible to determine definitely whether the lesion was simply cystic or whether malignant growth was also present. Similar conditions were present in the second case except that the lower segment of the cyst was visible protruding from the renal hilus. When the cyst was opened uncontrollable bleeding was encountered from a large vessel in the deeper portion of the cyst. An attempt was made to control the bleeding by packing and suturing without success, and it

was necessary to remove the kidney. On examination of the kidney after removal a fairly large ruptured blood vessel was found in the cystic cavity. In both kidneys there was evidence of previous inflammation, a probable causative factor in the formation of lymphatic cysts.

Lymphatic cysts are lined by a single layer of endothelial cells, and in most cases where the lesion is apparent and definitely recognizable and if it is certain that no malignant growth is present, simple drainage of the cyst and partial destruction of the cyst wall would give a satisfactory result. Lieberthal,⁷ Kreutzman¹¹ and Lüdin and Howald⁴ have reported similarly located cysts, though they were not noted as being lymphatic in origin, which healed readily following such conservative measures.

The effect of removal of the cysts on the elevated blood pressure was of interest. Apparently the cysts were so located as to cause a partial constriction of the renal artery, a condition which has been shown by experiments of Goldblatt¹² and others to cause renal ischemia and hypertension. The fall in blood pressure followed immediately after operation, and, while it remained low in one case for a year, insufficient time has elapsed in either case to predict where it will eventually become stabilized. Kreutzman¹¹ reported 2 cases in which an elevated blood pressure dropped after the drainage of renal cysts; in both cases the cysts were apparently so located as to obstruct the renal circulation. In the first case a cyst protruded from the dorsum of the kidney. It was aspirated and 120 cc. of clear, light yellow fluid removed; the blood pressure dropped from 210 systolic and 108 diastolic to 140 systolic and 90 diastolic directly after operation, and three years later it was 156 systolic and 94 diastolic. In the second case a preoperative blood pressure of 210 systolic and 125 diastolic dropped to 150 systolic and 105 diastolic; three years later it had become stabilized at 170 systolic and 100 diastolic. Similar cases have also been reported by Farrell and Young¹³ and Pearce, Bower and Burns.¹⁴

Solitary cysts occurring in the body of the kidney are not uncommon. Fish¹⁵ gave three theories of their formation: (1) congenital origin, (2) vascular damage plus tubal blockage, as described by Hepler,¹⁶ and (3) embryonal rests. Beer¹⁷ in 1922 stated that the sum of the evidence offered seems to support the view that simple, serous cysts originate from the lymphatic spaces situated between the layers of the true capsule, possibly through a traumatic or inflammatory agency. While it is possible that these theories may explain the origin of the majority of solitary cysts it is rather probable that a definite number are lymphangiomatous in origin. In some cases cysts which may have started as peripelvic cysts had become so large that the point of origin could not be determined. In other cases it is not improbable that the cysts may have arisen in the lymphatics in the body of the kidney. In the cases reported the cysts were localized in the peripelvic region

at the time of operation and sufficient tissue was available for examination to make certain of their lymphatic nature.

SUMMARY

Peripelvic lymphatic cysts of the kidney, usually small and of little clinical importance, may become of sufficient size partially to destroy the kidney. These cysts are probably lymphatic ectasia associated with obstruction of the lymphatic trunks of the hilus of the kidney. Lymphatic cysts add one more to the list of types and the theories of development of renal cysts.

Two cases are reported in which lymphatic cysts extending from the hilus to the body of the kidney caused extensive renal damage and exerted pressure on the renal vessels. There was pronounced hypertension in both cases; removal of the cystic kidney caused a considerable drop in blood pressure in each case.

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ABSTRACT OF DISCUSSION

DR. BASIL A. HAYES, Oklahoma City: Two cases of peripelvic cysts have come under my observation during the past year. The first was in a woman aged 50 who had a palpable fluctuant mass in the upper right quadrant of the abdomen. Cystoscopy and pyelograms revealed the characteristic appearance of a large cyst which covered the kidney shadow and partially obscured it. On operation the cyst plainly arose from the anterior surface of the kidney about the junction of medulla and pelvis. It was so large that it had almost squeezed out the middle portion of the kidney, leaving the two poles connected by a narrow isthmus of renal tissue. The patient had had intermittent attacks of pyelitis which I considered were due to pressure on the ureteropelvic junction. The cyst was dark colored and filled with a clear fluid. On attempting to peel the wall away from renal tissue I ran into considerable hemorrhage and had to content myself with trimming the wall close to the kidney and running a hemostatic suture all the way around the cut edge. Even with this precaution the patient lost considerable blood, and I found it necessary to give her a transfusion afterward. The second case was in a man aged 55 who came to me with a stone in the left renal pelvis. On operation I found three small cysts attached to the pelvic wall. These had to be excised before I could get at the stone. I had no difficulty in doing so but here again found it necessary to do considerable tying off of blood vessels in order to stop oozing from the peripelvic fat. This tissue showed evidence of chronic inflammation and was rather vascular. Both these patients made uneventful recoveries. I regret to say that the histology was not studied in the last case, but the first one showed a dense fibrous wall, with an outer zone of compressed renal tissue. Neither had had hypertension but each had had a chronic inflammation in the renal pelvis. As to the probable origin of these structures, I am reminded by our pathologist, Dr. Bela Halpert, that the entire kidney is derived from mesodermal tissue and frequently contains rests or anlagen which could develop into cysts; also that a distinguishing characteristic of lymphatic tissue is its property to divide and redivide, forming numerous communicating spaces rather than large cavities lined by a cellular membrane. As opposed to this, epithelial rests tend to form cysts lined by a secreting membrane. Also, this tissue may transform itself into other bizarre forms, as in teratomas. This being the case, I wonder whether one could be sure that any particular cyst arose from lymphatic tissue or whether it more likely came from an epidermal rest.

DR. A. J. SCHOLL, Los Angeles: I do not believe that these cysts are as uncommon as a review of the literature suggests. I think that some cysts were so large that their point of origin was lost; also, some penetrate up through the parenchymal tissue and present themselves as simple serous cysts. The cyst walls are composed of thinned-out attenuated endothelial cells similar to those found in all lymphatic cysts. The cysts in the cases reported by Henthorne were all small, but a study of the lining cells definitely established their lymphatic origin.

11. Kreutzman, H. A.: Hypertension Associated with Solitary Renal Cyst: Report of Two Cases, *J. Urol.* 57: 467-472, 1947.

12. Goldblatt, H.: Experimental Hypertension Induced by Renal Ischemia, *Bull. New York Acad. Med.* 14: 523-553, 1938.

13. Farrell, J. I., and Young, R. H.: Hypertension Caused by Unilateral Renal Compresses, *J. A. M. A.* 115: 711-712 (Feb. 28) 1942.

14. Pearce, A.; Bower, J. O., and Burns, J. C.: Uncomplicated, Solitary Serous Renal Cysts with Hypertension Relieved by Nephrocystectomy, *Ann. Int. Med.* 20: 994-998, 1944.

15. Fish, G. W.: Large Solitary Serous Cysts of the Kidney, *J. A. M. A.* 112: 514-517 (Feb. 11) 1939.

16. Hepler, A. B.: Solitary Cysts of the Kidney, *Surg., Gynec. & Obst.* 50: 668-688, 1930.

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TREATMENT OF MENINGITIS WITH SULFADIAZINE AND SULFAMERAZINE

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Previous studies from this hospital have endeavored to determine the value of various sulfonamide drugs in the treatment of meningococcic meningitis and to analyze certain factors which influence the prognosis of this disease.¹ Although these studies have shown that the case-fatality rate in meningococcic meningitis could be lowered to approximately 10 per cent with the use of either sulfadiazine or sulfamerazine, it was felt that it might be possible to reduce the fatality rate still further. One way to do this, according to the opinion of some investigators,² would have been to employ larger doses of sulfonamide compounds. Motivating against such a course, however, was the expectation that renal calculi would develop in more patients if the dose of sulfadiazine or sulfamerazine were increased.

The studies of Lehr³ suggested the possibility that larger doses of sulfonamide drugs could be used without raising the frequency of renal complications by administering a combination of these drugs. He reported that the sulfonamide drugs when present simultaneously in the same solution in the free form were soluble to the extent of their separate solubilities. In other words, a saturated solution of sulfadiazine could be almost completely saturated with sulfathiazole. He demonstrated also that the acute and chronic toxicity of this drug combination for albino rats was strikingly lower than that which accompanied the administration of the same total concentration of each drug alone. Furthermore, the incidence of intrarenal drug precipitation was significantly lowered when the mixture was used. In vitro antibacterial studies showed that the effectiveness of the mixture corresponded closely to that obtained by the total amount of all of the sulfonamide drugs in the mixture.

In view of these observations, we decided to try a combination of sulfadiazine and sulfamerazine in patients who were admitted to Gallinger Municipal Hospital with the diagnosis of bacterial meningitis. It is the purpose of the present paper to compare the clinical results and the incidence of drug toxicity obtained under this regimen, which was begun in October 1944, with those obtained in previous studies in which sulfadiazine or sulfamerazine was used alone.

From the Infectious Disease Service and the George Washington Medical Division, Gallinger Municipal Hospital, and the Departments of Pediatrics and Medicine, George Washington University.

Dr. Jean J. Vivino, Dr. Jay A. Robinson, Dr. Mark H. Lepper and the members of the Pediatrics Service and Georgetown Medical Division cooperated in the completion of these studies; Miss Jean Rowe furnished technical assistance.

1. (a) Lepper, M. H.; Sweet, L. K., and Dowling, H. F.: The Treatment of Meningococcic Infections with Sulfadiazine and Sulfamerazine, *J. A. M. A.* 123: 134-138 (Sept. 18) 1943. (b) Sweet, L. K.; Dumoff-Stanley, E., and Dowling, H. F.: Meningococcic Meningitis Treated with Sulfadiazine and Sulfamerazine: A Three Year Study, *Ann. Int. Med.* 23: 338-348, 1945.

2. Marangoni, B. A., and D'Agati, V. C.: Treatment of One Hundred and Thirty-Four Cases of Meningococcic Infections with Massive Doses of Sulfadiazine, *Am. J. M. Sc.* 207: 67-77, 1944.

3. Lehr, D.: Inhibition of Drug Precipitation in the Urinary Tract by the Use of Sulfonamide Mixtures, *Proc. Soc. Exper. Biol. & Med.* 55: 11-14, 1945.

PLAN OF STUDY

The procedure for diagnosis and treatment was as follows: Every patient suspected of having meningitis was given a lumbar puncture immediately on arrival on the ward. The first few drops of cerebrospinal fluid were allowed to fall onto a sterile chocolate agar slant for culture, and later transfers were made to "tryptose"-phosphate or "tryptose"-phosphate-hemoglobin broth. The remainder of the spinal fluid withdrawn was examined promptly with respect to the number of kinds of leukocytes present. Smears of the centrifuged sediment were stained with methylene blue and Gram's stain. The number of micro-organisms seen on smear was reported as "rare," "few" or "many." Bacteria were reported as being "rare" when they could be demonstrated only after considerable search; "few" cocci were recorded when half of the fields contained no organisms and relatively few micro-organisms were present in any one field, and "many" cocci were recorded when at least one micro-organism was seen in many fields and several micro-organisms were seen in most fields. An attempt was made to type the meningococci, pneumococci and influenza bacilli by the Neufeld technic if the organisms were present in sufficient numbers. The protein content was estimated qualitatively by the method of Pandey⁴ and quantitatively by the method of Dennis and Ayer.⁵ The dextrose content was determined qualitatively by the five tube reduction method⁶ and quantitatively by the Benedict's modification of the Folin-Wu method.⁷ A blood culture was also obtained before treatment was begun.

In adults the initial oral dose was 4 Gm. each of sulfadiazine and sulfamerazine followed by maintenance doses of 1 Gm. of each every six hours. In the case of patients who were severely ill or unable to swallow, or those who were vomiting, the initial dose was the same as the oral dose, except that the sodium salt was given by the intravenous or subcutaneous route in a solution which was not more concentrated than 0.5 per cent. The maintenance parenteral dose in these patients was 1.5 Gm. of each drug subcutaneously every eight hours, dissolved in 500 to 1,000 cc. of isotonic solution of sodium chloride. In most patients in the present series, the initial dose and one or two subsequent doses were given intravenously.

Proportionally smaller doses were given to children, computed on the basis of 0.045 Gm. of each drug per pound (0.099 Gm. per kilogram) of body weight per day. The initial dose was one half of the total calculated twenty-four hour dose. Subsequent doses were one fourth of the twenty-four hour dose given at six hour intervals. Subcutaneous maintenance doses were one third of the daily dose and were given every eight hours. The drugs were administered until the patient was afebrile for at least seven days, unless there was some indication for stopping them sooner. In the group of patients with meningococcic meningitis in a previous series who received either sulfadiazine or sulfa-

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5. Dennis, W., and Ayer, J. B.: A Method for Quantitative Determination of Protein in Cerebrospinal Fluid, *Arch. Int. Med.* 26: 436-442 (Oct.) 1920.

6. Alexander, H. E.; Ellis, C., and Leidy, G.: The Treatment of Type-Specific Hemophilus Influenzae Infection in Infancy and Childhood, *J. Pediat.* 20: 673-698 (June) 1942.

7. Benedict, S. R.: The Determination of Blood Sugar, *J. Biol. Chem.* 4-1: 207-213 (May) 1925.

merazine alone, the method of administration was similar to that described here, except that adults were given 6 Gm. of the sulfonamide compound as the initial dose, followed by 1 Gm. every four hours, while the doses for children were calculated on the basis of 0.065 Gm. per pound (0.143 per kilogram) of body weight per day. Thus, the doses used in the present series represent a 25 to 33 per cent increase over the doses previously employed.

The patients were followed carefully during the period of drug administration with hemograms and urinalyses and by frequent determinations of urea nitrogen and sulfonamide compounds in the blood. Renal complications were studied particularly as to the presence of renal colic, gross hematuria, oliguria, anuria, azotemia or any combination of these. To patients in whom these renal complications developed fluids were given liberally in amounts of 3,500 cc. per day combined with 15 to 18 Gm. of sodium bicarbonate in divided doses. Whether or not sulfonamide therapy was discontinued at that time depended on the patient's response to the treatment for the renal complication

he evaluated at this time since the results were essentially the same as those previously reported with the use of penicillin plus one of the sulfonamide compounds alone.*

RESULTS

The present series of 135 patients who received the combination of sulfadiazine and sulfamerazine includes 75 with meningococcic meningitis, 38 with pneumococcic meningitis and 22 with other types of meningeal infection. This latter group is comprised of 17 patients with pyogenic meningitis in whom the causative organism could not be identified, 2 with meningitis due to *Hemophilus influenzae*, 1 with meningitis due to *Escherichia coli* and 2 with meningitis due to an unidentified gram-negative bacillus.

In a previous study of 207 patients with meningococcic meningitis who received either sulfadiazine or sulfamerazine alone,¹¹ the following factors were considered to be of prognostic significance: the age of the patient and the presence and duration of coma or delirium. The number of micro-organisms in, and the dextrose content of, the initial specimen of cerebro-

TABLE 1.—Results Obtained in Patients with Meningococcic Meningitis Receiving a Combination of Sulfadiazine and Sulfamerazine or Either of These Drugs Alone

	Group A Patients Treated with a Sulfamerazine Mixture				Group B Patients Treated with Either Sulfadiazine or Sulfamerazine Alone			
	Number	Percentage	Deaths	Percentage	Number	Percentage	Deaths	Percentage
Case-fatality rate								
All patients	75	100	5	6.7	207	100	21	10.1
Patients over 40 years of age	12	16	2	17	59	28	12	20
Patients admitted in coma or delirium	40	54	5	12	94	45	20	21
(1) Age: 40 years or over	9	12	2	22	34	16	12	35
(2) Many meningococci in the initial specimen of cerebrospinal fluid	24	32	3	12	43	21	11	26
(3) Dextrose less than 10 mg./100 cc. in the initial specimen of cerebrospinal fluid	27	36	3	11	39	19	10	26
Complications related to disease*	10	14	..	..	49	24	..	..
(1) Nerve palsies	6	..	..	..	35	..	..	..
(2) Polyarthritides	4	..	..	..	10	..	..	..
(3) Conjunctivitis	0	..	..	..	4	..	..	..
Course of disease*								
(1) Average duration of fever		3.0 days				2.5 days		
(2) Average duration of pleocytosis in the cerebrospinal fluid		10.7 days				19.0 days		

* In patients who recovered only.

and the need for further sulfonamide therapy. We did not consider the appearance of crystalluria or microscopic hematuria an indication for discontinuing sulfonamide therapy. When crystalluria was pronounced, or microscopic hematuria was found to be present, fluids were forced, but sodium bicarbonate was withheld in order to parallel the treatment, with respect to alkalization, given the patients previously treated with only one sulfonamide compound.

Follow-up lumbar punctures on patients with meningococcic meningitis were done on the second hospital day and again when discharge was contemplated. If the cell count had not returned to 30 cells per cubic millimeter, the punctures were repeated at weekly intervals, and the patient was not discharged until that number was reached. Additional lumbar punctures were done only if recovery was not progressing satisfactorily. Each specimen of spinal fluid was examined in the same manner as the specimen obtained initially.

Patients with pneumococcic meningitis received the same amount of sulfonamide drugs as did the patients with meningococcic meningitis, but were given penicillin both intramuscularly and intrathecally. The results of the treatment of pneumococcic meningitis with penicillin and the sulfonamide mixture will not

spinal fluid were found to be of significance in the presence of coma or delirium. In order to evaluate the relative effectiveness of the sulfonamide mixture and of sulfadiazine or sulfamerazine alone, we compared the severity of the infection in the two groups of patients, on the basis of the foregoing prognostic factors. This comparison is shown in table 1. It can be seen that the factors which make for a poor prognosis were present as frequently in the 75 patients treated with the combination of sulfadiazine and sulfamerazine as in the 207 patients treated with either of the drugs alone.

The efficacy of the various sulfonamide compounds in the treatment of meningococcic meningitis can be evaluated most accurately on the basis of the case fatality rate. For group A, this was 6.7 per cent as compared with 10.1 per cent for group B. The difference in these case-fatality rates was not of statistical significance when tested by the chi square method.⁸ The case fatality rate for group A, however, was no lower than that obtained for the group of patients

8. Sweet, L. K.; Dumoff-Stanley, E.; Lepper, M. H., and Dowling, H. F.: The Treatment of Pneumococcic Meningitis with Penicillin, *J. A. M. A.* 127: 263-267 (Feb. 3) 1945.

9. Hill, A. B.: Principles of Medical Statistics, ed. 2, London, The Lancet, Ltd., 1939.

treated during 1944 with a single sulfonamide drug alone.

A comparison of the fatality rates in the two groups according to certain prognostic factors was also made in table 1. When two factors contributing to poor prognosis were combined, for instance old age and

TABLE 2.—Sulfonamide Concentrations Obtained in the Blood of Patients Receiving Sulfadiazine, Sulfamerazine and Combinations of the Two Drugs

Drug	Dose, Gm. per Day	Number of Patients	Average Free Sulfonamide Concentration *		
			Lowest	Median	Highest
Sulfadiazine.....	6	34	4.5	7.6	13.0
Sulfamerazine.....	6	23	4.6	11.0	19.8
Sulfadiazine-sulfamerazine mixture.....	8	88	7.4	14.0	21.2

* Expressed as sulfadiazine.

coma, the fatality rate in group A was 22 per cent and in group B 35 per cent. When patients were in coma and at the same time had many meningococci in the spinal fluid the fatality rates were 12 and 26 per cent for groups A and B respectively. For patients

TABLE 3.—Incidence of Reactions in Patients Treated with a Sulfadiazine-Sulfamerazine Combination and Patients Treated with Either Sulfadiazine or Sulfamerazine Alone

Type of Disease	Drug Employed	Average Daily Dose, Gm.	Number of Living Patients Treated	Renal Complications		Fever and/or Rash and/or Conjunctivitis		Leukopenia and/or Anemia		Nausea and/or Vomiting	
				Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pyogenic meningitis.....	Sulfadiazine-sulfamerazine mixture	8	108	8	7.4	17	15.7	2	1.8	2	1.8
Meningococcal meningitis.....	Sulfadiazine-sulfamerazine mixture	8	70	5	7.2	11	15.7	1	1.4	1	1.4
Meningococcal meningitis.....	Sulfadiazine alone	6	99	8	8.1	10	10.1	3	3.2	4	4.4
Meningococcal meningitis.....	Sulfamerazine alone	6	87	10	11.5	5	5.8	1	1.2	3	3.5

in coma with a low level of dextrose in the spinal fluid the fatality rates were 11 and 26 per cent respectively. Thus it is evident that not only was the case-fatality rate lower for the entire group of patients treated with the combination of sulfonamide drugs but it was also lower in the group treated with the mixture of sulfadiazine and sulfamerazine when patients with the poorest prognoses were considered. The differences in these case-fatality rates, however, were not statistically significant.

The ages of 3 patients in group A who died were 65, 48 and 22 respectively; each had been comatose for twenty-four hours prior to admission, and the spinal fluids of all 3 had many micro-organisms and a low dextrose content. Two other patients died from a fulminating infection characteristic of the Waterhouse-Friederichsen syndrome.

The clinical course of the disease in the patients who recovered, however, was not significantly altered by the use of the combination of sulfadiazine and sulfamerazine when one considers that the average duration of fever and pleocytosis of the cerebrospinal fluid in patients of group A was 3 and 16.7 days respectively, whereas in group B the figures were 2.5 and 19 days respectively.

In table 1 is shown the incidence of complications related to the meningococcal infection, 14 per cent in group A and 26 per cent in group B. In group A, there were 4 patients with polyarthritis, 3 with sixth nerve palsy, 2 with eighth nerve deafness and 1 with

optic atrophy. Among the patients in group B, the most frequent complications related to the infection were nerve palsies. These occurred in 35 patients. The other complications encountered were 10 instances of polyarthritis and 4 of purulent conjunctivitis.

The meningococcus was identified from the blood or spinal fluid in 51 patients in group A. Of these patients, 78 per cent had group I and 22 per cent group II (a) infections respectively.

TOXICITY OF THE SULFONAMIDE COMPOUNDS

Estimations of the sulfonamide concentration in the blood (sulfadiazine being employed as the standard) were made frequently in the case of 88 of the patients who were given the combination sulfadiazine and sulfamerazine, and the highest and lowest concentrations were tabulated for each patient. The values observed were found to be similar regardless of the type of meningeal infection. We therefore are comparing the average high, low and median sulfonamide concentrations in the blood obtained from these 88 patients with those obtained from 34 and 23 patients who received either sulfadiazine or sulfamerazine alone respectively. These figures are shown in table 2. It is apparent that the average sulfonamide concentration in the blood

in the group treated with sulfadiazine and sulfamerazine was slightly higher than those obtained in the sulfamerazine-treated group and much higher than those in the sulfadiazine-treated group.

In table 3 is presented the incidence of toxic reactions which occurred in 108 patients who received sulfadiazine and sulfamerazine in combination as compared with 99 patients who were given sulfadiazine alone and 87 patients who received sulfamerazine alone. The patients who died are not considered in this part of the toxicity study, since death often occurred before toxic reactions had time to develop.

The incidence of renal complications in the 108 patients with meningococcal meningitis who received the mixture of sulfadiazine and sulfamerazine was 7.4 per cent as compared with an incidence of 8.1 per cent and 11.5 per cent in the 99 and 87 patients respectively who received either sulfadiazine or sulfamerazine. The differences between these figures were tested by the chi square method and found not to be statistically significant.

On the other hand, the occurrence of fever, rash and conjunctivitis was greater in those patients who received the drug combination (15.7 per cent) than in those who received either sulfadiazine (10.1 per cent) or sulfamerazine (5.8 per cent). When these results were tested by the chi square method, it was found that the more frequent occurrence of fever, rash and conjunctivitis in the group of patients who received a combination of sulfadiazine and sulfamerazine approached

statistical significance when compared with those which occurred in the group of 186 patients who received either sulfadiazine or sulfamerazine alone.¹⁰

The hematologic (leukopenia and anemia) and gastrointestinal (nausea and vomiting) manifestations of drug toxicity did not occur frequently enough in any of the groups studied to be evaluated adequately. Furthermore, the significance of nausea and vomiting was especially difficult to evaluate since these symptoms were more often related to the disease than to the treatment.

COMMENT

Several investigators have indicated that the administration of two sulfonamide drugs in combination would prove to have several advantages over the use of one drug alone. We administered a combination of sulfadiazine and sulfamerazine to a group of patients with bacterial meningitis to ascertain whether there were any advantages to this method of sulfonamide therapy.

Among the 75 patients with meningococcal meningitis treated with the sulfonamide mixture, the case-fatality rate was 6.7 per cent, compared with a fatality rate of 10.1 per cent in a similar group of patients treated with either drug alone. No importance can be attached to this slight difference in fatality rates for two reasons: (1) The difference was not statistically significant when tested by the chi square method, and (2) the patients in the present series were treated at the end of an epidemic. The case-fatality rates for patients with meningococcal meningitis treated with sulfonamide compounds in this hospital have been reported previously.¹¹ In 1942, 48 patients were treated with a fatality rate of 12.5 per cent. For 1943, the corresponding figures were 107 patients and 12.1 per cent, and for 1944, 61 patients and 6.5 per cent. All of the foregoing patients received either sulfadiazine or sulfamerazine alone. The fatality rate of 6.7 per cent for the present series is comparable to that observed in the other cases treated in the latter half of the epidemic.

Although we were previously of the opinion that high sulfonamide concentrations in the blood bore no direct relation to recovery in patients with meningococcal meningitis,¹² we purposely used larger doses of the mixture of sulfadiazine and sulfamerazine in the present series than are ordinarily employed for two reasons, (1) to determine whether the better clinical results predicted by the proponents of the use of the mixture could be obtained with higher doses and (2) to explore the upper limits of dosage at which the mixture could be safely administered. The fact that the incidence of renal complications in the patients receiving these higher doses of the sulfadiazine-sulfamerazine combination was no greater than that observed in patients receiving the conventional doses of either sulfadiazine or sulfamerazine alone is in all probability due to the improvement in solubility gained by using a mixture of sulfonamide compounds. The incidence of renal complications might have been decreased further had we used a lower dose of sulfamerazine in proportion to the amount of sulfadiazine in the mixture, as did Frisk and his associates¹³ in their experiments. They found that when doses of

0.6 Gm. per kilogram each of sulfathiazole, sulfadiazine and sulfamerazine were administered to rabbits the last drug caused more renal concretions than did the other two. Frisk attributed this result to the slow excretion of the sulfamerazine as compared with the more rapid excretion of the other sulfonamide derivatives. Dowling, Lepper and co-workers¹⁴ have also shown that sulfamerazine in comparable doses causes a higher incidence of renal complications.

The recent work of Nilzen¹⁵ demonstrated the clinical efficacy of sulfonamide mixtures. Using the mixture, suggested by Frisk, which contained 0.37 Gm. of sulfathiazole, 0.37 Gm. of sulfadiazine and 0.26 Gm. of sulfamerazine per gram of final mixture, Nilzen treated 105 patients with gonorrhea with 9 Gm. daily for three days without the occurrence of any renal complications. Lehr¹⁶ also has published the results obtained by him in the clinical evaluation of a sulfonamide mixture. He treated 57 patients with a mixture of equal parts of sulfathiazole and sulfadiazine. The mixture was administered orally in doses of 4 Gm. initially and 1 Gm. every four hours thereafter. One gram every six hours was given when the severity of the disease being treated permitted smaller doses. The average duration of therapy was approximately five days. No renal complications occurred in any of his patients and in only 1 patient did drug fever develop.

That the incidence of fever, rash and conjunctivitis was significantly higher in our patients who received the drug mixture than in those who were treated with the individual drugs is worthy of comment. In a previous study, one of us¹⁷ treated 61 patients with pneumonia with a combination of sulfathiazole and sulfadiazine in doses of 0.25 Gm. of each every four hours. The incidence of fever, rash and conjunctivitis in these patients was 8.2 per cent as compared with 1 per cent in 140 patients who received sulfadiazine in doses of 3 Gm. per day. This is a statistically significant difference.¹⁸ No renal complications occurred in either group. Although we have no figures on the incidence of febrile and cutaneous manifestations in patients who received sulfathiazole alone in low doses, Dowling and Lepper¹⁷ found that among 321 patients who received sulfathiazole in doses of 1 Gm. every four hours, 6.2 per cent had fever, rash and conjunctivitis. These figures apparently confirm the fact that when two sulfonamide compounds are administered in combination the incidence of these complications is likely to be higher than when either drug is given alone.

This increase in the incidence of allergic manifestations which we have observed after the use of sulfonamide combinations may assume clinical importance in the light of recent pathologic reports on the occurrence of diffuse necrotic, granulomatous, polyvascular inflammatory and degenerative lesions in patients who received a sulfonamide drug prior to death.¹⁸ Such

12. Dowling, H. F.; Dumoff-Stanley, E.; Lepper, M. H., and Sweet, L. K.: Relative Toxicity of Sulfadiazine and Sulfamerazine, *J. A. M. A.* **125**: 103-105 (May 13) 1944.

13. Cited by Frisk, Hagerman, Helander and Sjogren.¹¹

14. Lehr, D.: The Prevention of Renal Complications by the Therapeutic Employment of Sulfonamide Mixtures *J. Urol.* **60**: 548-566, 1946.

15. Dowling, H. F., and Dumoff-Stanley, E.: Unpublished data.

16. Chi square (Yates' correction) equals 4.9.

17. Dowling, H. F., and Lepper, M. H.: Toxic Reactions Following Therapy with Sulfapyridine, Sulfathiazole, and Sulfadiazine, *J. A. M. A.* **121**: 1190-1194 (April 10) 1943.

18. Lichtenstein, L., and Fox, L. J.: Necrotizing Arterial Lesions Resembling Those of Periarthritis Nodosa and Focal Visceral Necrosis Following Administration of Sulfathiazole, *Am. J. Path.* **22**: 665-678, 1946. French, A. J.: Hypersensitivity in the Pathogenesis of the Histopathologic Changes Associated with Sulfonamide Chemotherapy, *ibid.* **22**: 679-702, 1946. More, R. H.; McMillan, G. C., and Duff, G. L.: The Pathology of Sulfonamide Allergy in Man, *ibid.* **22**: 703-736, 1946.

10. The value of chi square corrected according to Yates' modification for small numbers equals 3.3. Values for chi square to make $\frac{1}{2}$ p equal to $2\frac{1}{2}$ per cent or $\frac{1}{2}$ per cent must be greater than 3.8 or 6.6 respectively.

11. Frisk, A. R.; Hagerman, G.; Helander, S., and Sjogren, B.: Sulpha Combination: A New Chemotherapeutic Principle, *Nord. med.* **29**: 639, 1946.

lesions were felt to be definite allergic manifestations to the sulfonamide compounds. It should be remembered also that when sulfonamide mixtures are used there is an added disadvantage of possibly sensitizing the patient to more than one of the sulfonamide drugs.

There is some evidence that in pneumococcic pneumonia large doses of sulfadiazine will reduce the case-fatality rate below that obtained when the conventional doses are used.¹⁹ We are not aware, however, of any studies in which two different dosage regimens were compared in the treatment of meningococcic meningitis. Reinhold and his co-workers²⁰ studied concentrations of sulfamerazine in the body fluids of patients with meningococcic meningitis and found that for each milligram of increase in plasma sulfamerazine concentration the average patient response was found to be shortened by one day. Thus, higher plasma concentrations of this sulfonamide compound apparently lowered the morbidity resulting from the disease. On the other hand, in our previous study¹⁹ there was no evidence that high sulfonamide concentrations in the blood were accompanied by a higher recovery rate. When we compared the case-fatality rates, duration of illness and evidence of complications in our patients who received 6 Gm. of sulfadiazine or sulfamerazine with the same factors in the patients who received a combination of the two drugs, totaling a 25 per cent increase in dose, there were no significant differences between the two groups. It is possible that if higher doses had been given to the patients in the one group, the mortality and morbidity would have been lowered significantly. On the other hand, we found that even with this moderate increase in dosage, the use of the combination of the two sulfonamide compounds did not lower the incidence of the serious renal complications of sulfonamide therapy. It is to be anticipated that a further increase, let us say 100 per cent, in the dose of sulfonamide compounds would be attended by a prohibitive number of renal complications. Furthermore, the addition of a second sulfonamide compound materially increased the percentage of patients who had drug fever, dermatitis and conjunctivitis. We are consequently doubtful whether the advantages which may be gained by the use of mixtures of sulfonamide compounds are sufficient to outweigh the disadvantages of this procedure.

SUMMARY AND CONCLUSION

A group of 135 patients with meningitis, 75 with meningococcic, 38 with pneumococcic and 22 with other types of bacterial meningitis, were treated with a combination of sulfadiazine and sulfamerazine, a dose of 4 Gm. per day of each sulfonamide compound being used.

The case-fatality rate was 10.1 per cent in the patients treated with sulfadiazine or sulfamerazine alone and 6.7 per cent in the patients treated with a combination of the two drugs. This difference was not considered to be significant in view of the fact that the patients who received the combined therapy were treated at the end of an epidemic.

The incidence of renal complications occurring in the group of patients who received the mixture of sulfonamide compounds was 7.4 per cent as compared with an incidence of 8.1 per cent and 11.5 per cent in the patients who received either sulfadiazine or sulfamerazine respectively. These differences were not statistically significant.

The incidence of fever, rash and conjunctivitis attributed to the use of the mixture of sulfadiazine and sulfamerazine was 15.7 per cent, an increase over the incidence obtained when the drugs were used alone.

It is concluded that in the doses employed for the treatment of meningococcic meningitis the disadvantages of using a mixture of sulfadiazine and sulfamerazine outweigh the advantages.

HYPOGENITALISM DURING THE USUAL TIME OF PUBERTY

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The purpose of this communication is to define hypogenitalism; to evaluate its significance when present in a 13 or 14 year old boy; to suggest conservative methods in management, and to enumerate the possible outcomes in untreated cases.

DEFINITION AND MEASUREMENT

Hypogenitalism should mean a disproportionate smallness of the external genitalia in relation to somatic development. Up to the age of 11 or 12 the testes as well as the penis undergo little change in size.¹ The average volume displaced by the prepubescent testicle is around 2 cc., and it is approximately 1.7 cm. long and 0.8 cm. wide.² With puberty, the testes increase in size, but the difficulty is that many boys do not begin pubescence at 11 years of age despite the fact that the growth continues. The fact that 18 per cent of boys do not begin pubescence until the age of 14 or after, I feel certain, is not generally recognized or at least is frequently overlooked.³ At this age, therefore, if no evidence of sexual growth can be discovered, one is confronted with a problem which is not only common but at times difficult to solve.

In the fat boy even with beginning pubescence, the genitalia often appear small because they are partially submerged in adipose tissue (fig. 1). The size of the testes may be estimated not only by linear measurements but also by comparison with models of various volumes⁴ (fig. 2). To determine the volume the scrotal skin is drawn tightly over the testis and the comparison is made. Any testis which is approximately 2 cc. in volume before pubescence may be considered normal, but meniscule, that is, those well below the 2 cc. volume should be viewed with suspicion and regarded as instances of hypogenitalism. The chief exception to this statement is cryptorchidism, in which the penis may be of normal size (fig. 1 B).

From the Department of Internal Medicine, the Lahey Clinic.
Read before the Section on General Practice of Medicine at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.
1. Reich, H.: *Testikelmessungen bei Kindern*, Jahrb. f. Kinderh. 111: 177-182 (Jan. 10) 1943.
2. Sch. . . . of Male Pubescence, J. A. M. A. 121: 177-182 (Jan. 10) 1943.
3. Greulich, W. W.; Dorfman, R. I.; Catchpole, H. R.; Solomon, C. I., and Culotta, C. S.: *Somatic and Endocrine Studies of Puberal and Adolescent Boys*, Monograph 7, Washington, D. C., Society for Research in Child Development, 1942, vol. 7, serial 33, no. 3.
4. Schonfeld, W. A., and Beebe, G. W.: *Normal Growth and Variation in Male Genitalia from Birth to Maturity*, J. Urol. 48: 759-777 (Dec.) 1942.

19. Collen, M. F., and Phillips, E.: Dose of Sulfadiazine in the Treatment of Pneumococcic Pneumonia, Arch. Int. Med. 76: 22-30 (July) 1945.
Frisch, A. W.; Price, A. E., and Myers, G. B.: Pneumococcic Pneumonia: The Selection and Control of Serum and Chemotherapy by Sputum Examinations, Am. J. M. Sc. 205: 771-780 (June) 1943.
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FRÖHLICH'S AND OTHER DWARFING SYNDROMES

The fat pubescent or prepubescent boy is often labeled an example of Fröhlich's syndrome or adiposogenital dystrophy or is said to be of the Fröhlich type. There is still considerable confusion in the usage of the terms

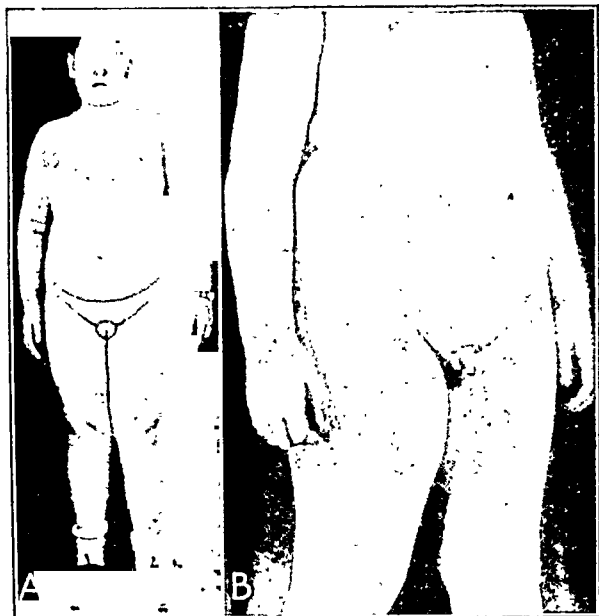


Fig. 1.—A, normal, obese and early pubescent boy 12 years of age. The penis is obscured in adipose tissue. The testes are above normal 2 cc. volume, indicating early pubescence. The height is 61 inches (154.9 cm.), and the height age, 14. This cannot be considered hypogenitalism. B, prepubescent boy with apparent hypogenitalism. The penis appears small because of massive obesity (160 pounds [72.6 Kg.]). The testes are in the inguinal canal and estimated to be of 2 cc. volume. The age is 11 years; the height, 61½ inches (156.2 cm.), and the height age, 14; the bone age, 14. Administration of 10,000 units of chorionic hormone was followed by slight further descent of testes and progression in size thereafter. The outcome is favorable in view of continued progress. The height two years later was 65½ inches (164.4 cm.); the weight, 190 pounds (86.2 Kg.). This is not Fröhlich's syndrome. Follicle-stimulating hormone was positive, estimated at 20 to 30 mouse units before therapy.

Fröhlich's syndrome, adiposogenital dystrophy and infantilism. When Fröhlich⁵ first described the syndrome, his patient was not obese but dwarfed, with proportionate retardation of sexual development (fig. 3). At a later date, his patient became rather obese, the latter being attributed to hypothalamic involvement from extension of a suprasellar cyst. Bartels⁶ introduced the term adiposogenital dystrophy, and also pre-

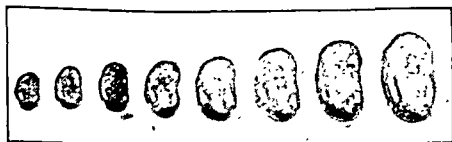


Fig. 2.—Models used for estimation of testicular size. The smallest represents 2 cc. volume, which is normal until pubescence. The largest volume, 18 cc., is usually found in a normal 18 year old boy or over. The intermediate models represent growth from the beginning of pubescence until its termination.

sented a dwarfed, obese person with proportionate genital retardation. Levi,⁷ in describing the syndrome

now known as Lorain-Levi infantilism, was also dealing with dwarfism and retarded sexual development in females. In all 3 instances, either a pituitary tumor or suprasellar cyst was present. These terms are essentially synonymous and the conditions are characterized, eventually at least, by retarded growth. There may be difficulty in some instances in determining whether or not dwarfing is present, but as a rule such is usually established by the time that advice is sought. Family heights must be considered in this investigation and school records obtained to determine the trend in recent months or years. Some allowance must also be made for the failure of puberal growth.

The time of onset of retarded growth as well as its duration may contribute to the size of the genitalia in these syndromes, since actual regression may take place despite a small increment of linear growth, especially in the late teens.

There are other dwarfing syndromes which have retarded genital development besides those already mentioned. These have characteristic and specific clinical features which make them, as a rule, readily recognizable. The more common are: cretinism, mongolism, Lawrence-Moon-Biedl syndrome and dwarfism such as is found in diabetes mellitus, various nutritional disorders and cerebral injury.

In all the dwarfing syndromes there is usually no hypogenitalism but only a retardation of genital growth which parallels somatic development. In fact, the testes may be larger in some dwarfs than those found in perfectly normal boys with somewhat late pubescence (fig. 4A). In such cases it is likely that the dwarfing condition began after the testes had reached the size observed, thus suggesting an arrest rather than failure of development.



Fig. 3.—Fröhlich's original patient.⁵ Note that the genitalia are proportionate to the size of the body.

CRYPTORCHIDISM

Cryptorchidism may be found in dwarfism (fig. 4B) or in an otherwise normal person without a disproportionately small penis or retardation of pubescence. Congenital absence of the testes (fig. 5), which is rare, must be considered in all cryptorchids, and can be suspected at the age of 13 or 14 because the penis remains abnormally small and does not respond to chorionic hormone therapy. Unsuccessful surgical treatment for cryptorchids may be followed by the equivalent of castration and hypogenitalism.

It is not my object to deal here with those conditions in which dwarfing occurs. It is not to be implied

5. Fröhlich, A.: Ein fall von Tumor der Hypophysis Cerebri ohne Akromegalie, Wien. klin. Rundschau 15:883-886 and 906-908 (Nov.) 1901.

6. Bartels, M.: Ueber die Beziel der Hypophysengröße zu Misswachstum und genitalis, München. med. Wchnschr 1901.

7. Faneau de la Cour, F. V.: Du téninisme et de l'infantilisme chez les tuberculeux, Thèse, Paris no. 1, 1871, p. 1. Levi, E.: Contribution à l'étude de l'infantilisme du type Lorain, Nauv. inconnu. de la Salpêtrière 21:297-421, 1908.

that there always exists a sharp distinction between dwarfing and nondwarfing syndromes; however, for clinical purposes this distinction provides a practical rule of thumb. Fröhlich's syndrome, adiposogenital dystrophy and Lorain-Levi infantilism represent a pan-hypopituitarism or a situation in which at least growth

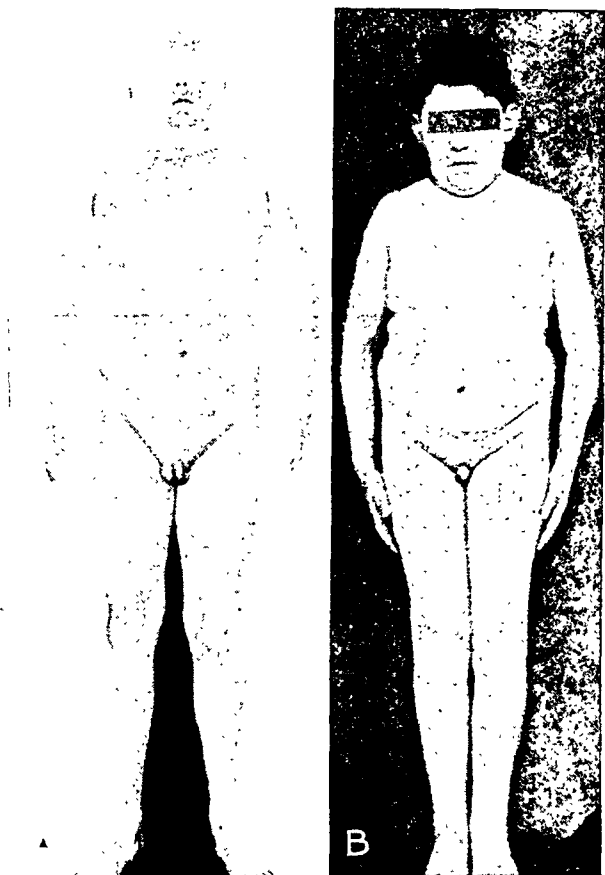


Fig. 4.—A, dwarf with proportionate genital retardation but not hypogenitalism. His age was 18; his height, 54 inches (137.2 cm.); his bone age, 10 years; his height age, 11 years. Urinary follicle-stimulating hormone was negative (less than 10 to 12 mouse units). There was 2 mg. of 17-ketosteroids per twenty-four hours; adrenal water test elicited a positive reaction. The sella turcica was normal. This case may be classified as Lorain-Levi infantilism or Fröhlich's syndrome. B, Fröhlich's syndrome, craniopharyngioma. The subject was a male 18 years old. His height was 56 inches (142.2 cm.) and his height age 11; his bone age was 11. There had been a previous operation for cryptorchidism before his condition was recognized. The penis was not out of proportion to the somatic age (11). The testes were meniscus.

and gonadotropic hormones are involved. Evidence of thyroid and adrenal deficiency and carbohydrate disturbance may be demonstrated in some (fig. 4A). Much more frequent and less complicated are those cases in which only the gonads or the pituitary gonad relationship appears to be affected. It is this group which I shall discuss in more detail.

DELAYED PUBESCENCE AND EUNUCHOIDISM

Boys of 14 years of age, for example, may show a rather wide range of skeletal maturation, which as a rule goes hand in hand with genital development.⁸ Obese boys of 14 with retarded pubescence need not be mistaken for examples of Fröhlich's or other syndromes, for they are generally well above average height. This fact alone is of great importance clinically because it practically limits the problem to deciding whether one is dealing with delayed pubescence or early eunuchoidism. The consistency of the testes may help differentiate between the two. I have already

referred to the suspicion that should be raised in connection with meniscus testes, but should they also be mushy in consistency, the chances for future function are greatly decreased. If, on the other hand, the testes are fairly firm but have not progressed beyond the prepubescent or pubescent size, it is impossible to predict the outcome, but spontaneous development is probable. One should, therefore, not jump to the conclusion at this age that a eunuchoid person is in the making; yet this is a serious threat and, if it could be predicted, would certainly demand treatment.

What observations, therefore, can be made to determine the probable outcome without therapy?

PUBESCENT BREAST ENLARGEMENT

Breast enlargement in the fat boy may be due only to adipose tissue and is unimportant as a diagnostic aid, but in the nonobese child, this is a fairly reliable sign of pubescence (fig. 6). This enlargement of the breasts subsides spontaneously, but if it persists while secondary sexual development occurs, another endocrine complex, gynecomastia with aspermia, must be suspected (figs. 10 to 13B).

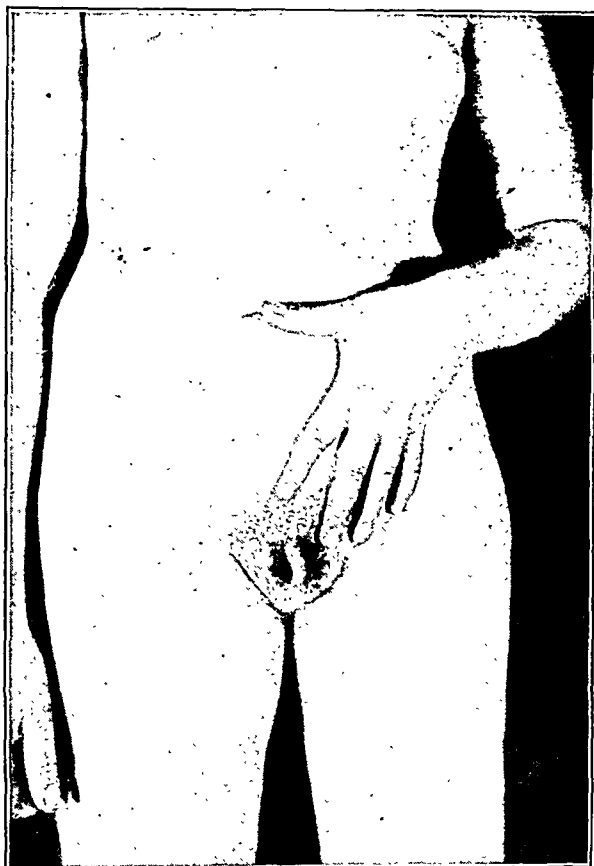


Fig. 5.—Eunuchoidism with hypogenitalism and probable absence of testes. The subject was a male aged 38; his height was 72 inches (182.9 cm.) and his span, 75 inches (190.5 cm.); the epiphyses of the hand and wrist were closed but the iliac crests were open. Initial urinary 17-ketosteroids were 45 mg. per twenty-four hours. Urinary follicle-stimulating hormone was strongly positive on repeated tests. Note the pubic hair. There was good response to testosterone, with marked increase in size of penis and further growth of pubic and body hair. Excess 17-ketosteroids probably originated in adrenal cortex.

TESTICULAR BIOPSY

Testicular biopsy is not often performed on boys at the age of 14 or 15, probably because the tendency is to let nature take its course. Testicular biopsy may,

however, provide an immediate and definite recognition of primary testicular disease. In general, biopsies may reveal three types of abnormalities: The first is an immature testis or a state of testicular arrest (fig. 7). Such a finding suggests gonadotropic failure or delay and should lend a favorable aspect to complete genital development including spermatogenesis even without therapy. The second general type of abnormality to be found in testicular biopsy is the presence of variable degrees of sclerosis (fig. 8), tubular hyalinization or atrophy (fig. 9). Leydig cells may be few or absent. In the third type the interstitial cells may be normal and clumped (fig. 10), in which case there may be varying degrees of genital development.⁸ When the tubules are completely devoid of spermatogonia and only Sertoli's cells remain, the outcome is unfavorable as regards spermatogenesis. If Leydig cells also are absent along with tubular degeneration, the only hope for permanent primary and secondary sexual development without spermatogenesis is continued testosterone therapy.



Fig. 6.—Enlarged breasts of normal pubescence. The subject was a male aged 13; his height was 64½ inches (163.8 cm.) and his span 66 inches (167.6 cm.). His bone age was 12.9; his height age, 15. Urinary follicle-stimulating hormone was negative. There was 16.8 mg. of 17-ketosteroids per twenty-four hours. Note absence of pigmented areolas (compare with fig. 13 B). The testes were normal for his age. There was subsequent normal development with disappearance of breast enlargement.

URINARY GONADOTROPINS

The testes are thought to be dependent on two pituitary gonadotropic hormones. The first, entitled follicle-stimulating hormone, acts on the tubules; the second, luteinizing hormone, affects the Leydig or interstitial cells. Spermatogenesis, therefore, cannot take place without Leydig cell function so that the two hormones must be present to produce normal sexual function and development.

This hypothesis may be challenged by the work of Simpson and Evans,⁹ who found experimentally that luteinizing hormone (also called interstitial cell-stimulating hormone) will stimulate testicular tubules with amounts that do not visibly affect Leydig cells and will maintain secondary sex changes ordinarily created by Leydig cell secretion. Testosterone, too, was found by these authors to stimulate tubules in hypophysectomized rats; the effect on secondary sex characteristics was in proportion to the effect on the tubules. Implantation of pellets¹⁰ in the scrotum has also been shown to stimulate spermatogenesis, showing a pronounced

local effect. As long ago as 1938 Nelson and Merckel¹¹ pointed out that the capacity of steroids to maintain spermatogenesis was not dependent on their androgenic character and that steroids with low androgenicity, such as androstenedione or androstenedione, were more effective in maintaining spermatogenesis. So far as I am aware, reports of the clinical use of these for this purpose have not been published.

A finding of increased follicle-stimulating hormone is the rule with primary testicular disease or castration. McCullagh,¹² nevertheless, has shown in boys with delayed puberty and apparent hypogonadism that normal or increased amounts of gonadotropins may be found. However, since the test is primarily for the tubule-stimulating hormone—that is to say follicle-stimulating hormone—it cannot indicate the status of the interstitial cell-stimulating hormone (luteinizing hormone) of the pituitary. These patients may respond to



Fig. 7.—Hypoplasia of testes. The subject was a man of 20 whose condition probably represents arrested development occurring at the ages of 15 or 16. There was spermatogonia without maturation. Slight thickening of lamina propria was observed. No definite Leydig cells were seen. Clusters of black-staining cells are erythrocytes. There was subsequent development of spermatogenesis (fig. 14).

chorionic gonadotropins, or puberty may later spontaneously develop (fig. 1 B). Such behavior suggests that

8. Klinefelter, H. F., Jr.; Reifenstein, E. C., Jr., and Albright, F.: Syndrome Characterized by Gynecomastia, Aspermatogenesis Without a-Leydigism and Increased Secretion of Follicle-Stimulating Hormone. *J. Clin. Endocrinol.* 2: 615-627 (Nov.) 1942.

9. Simpson, M. E., and Evans, H. M.: Comparison of the Spermatogenic and Androgenic Properties of Testosterone Propionate with Those of Pituitary ICSH in Hypophysectomized 40-Day Old Male Rat, *Endocrinology* 39: 281-285 (Nov.) 1946.

10. Dvoskin, S.: Local Maintenance of Spermatogenesis in Hypophysectomized Rats with Low Dosages of Testosterone from Intratesticular Pellets, *Proc. Soc. Exper. Biol. & Med.* 54: 111-113 (Oct.-Dec.) 1943.

11. Nelson, W. O., and Merckel, C. E.: Maintenance of Spermatogenesis in Hypophysectomized Mice with Androgenic Substances, *Proc. Soc. Exper. Biol. & Med.* 38: 737-740 (June) 1938.

12. McCullagh, E. P., and Kline, I. T.: Absence of Pituitary Failure in Fat Boys with Testicular Deficiency, *Cleveland Clin. Quart.* 13: 10-17 (Jan.) 1946.

either the testicle has to reach a certain degree of maturity for adequate response to normal quantities of luteinizing hormone or that luteinizing hormone is as yet insufficiently produced.

The opossum, which spends a large part of the usual embryonic life externally, does not react to gonadotropins until a certain developmental stage has been reached.¹³ This is also apparently true of the ovaries of all mammals after birth.¹⁴ The fact that some pre-pubescent boys do not respond to chorionic hormone while others do would appear to be in agreement with these observations, although testicular biopsies would be necessary for proof (fig. 11). Normal or moderately increased quantities of urinary follicle-stimulating hormone do not imply that the testicles are not responsive, but more likely indicate formation of insufficient luteinizing hormone to condition the tubules for utilization of follicle-stimulating hormone (fig. 1B). When present in great excess there is reason to suspect primary testicular disease such as found in surgical castrates or anorchi, but there are little data in the literature to indicate at what age this may first occur. It would seem that considerable variation is likely,

be in accord with the stage of somatic development. Thus the use of these determinations at the age under consideration may be of little aid.

URINARY 17-KETOSTEROIDS

Determination of urinary 17-ketosteroids at this age, too, is of doubtful value in distinguishing between delayed puberty and true eunuchoidism, for the values



Fig. 8.—Atrophy and sclerosis of testes in male eunuchoidism. Only a few spermatogonia and Sertoli's cells are present. There is increased collagenous tissue about tubules. No Leydig cells are visible. The specimen is from a male aged 31. The urinary follicle-stimulating hormone was weakly positive (estimated 10 to 20 mouse units); urinary 17-ketosteroids were 8.8 mg. per twenty-four hours.

just as in the variation of onset of normal puberty. Normal or decreased quantities may only indicate or



Fig. 9.—Atrophy of testes. Hypopituitarism due to chromophobe tumor. Autopsy specimen. Note absence of Sertoli's cells as well as spermatogonia and absence of Leydig cells. There is little or no fibrosis.

obtained in both should be at prepubescent levels.³ Rarely, in true eunuchoidism of testicular origin, they may be increased, probably due to adrenal hyperplasia (fig. 5). Such cases are always associated with excessive urinary gonadotropins.

BONE AGE

Roentgenograms of the hand and wrist or other joints may be of little value at this critical age.³ The variation from chronologic age in the normal may be from one to two years in contrast to the dwarfing syndromes in which bone age may lag far behind not only the chronologic age but also the height age (fig. 4). When eunuchoid persons have reached the age of 18 or 20, the epiphyses are usually still open, but the variation is too great at the age of 14 or so to be of decided value in differentiating true eunuchoidism from delayed pubescence.

TREATMENT WITHOUT BIOPSY

If a biopsy is not advisable, there are three courses which one can pursue: first, watchful waiting until the age of 15 or possibly 16 (fig. 12). By this time

13. Moore, C. R.: Sex Endocrines in Development and Prepuberal Life. *J. Clin. Endocrinol.* 4: 135-141 (March) 1944.

14. Hisaw, F. L.: Development of the Graafian Follicle and Ovulation. *Physiol. Rev.* 27: 95-120 (Jan.) 1947.

pubescence may have begun and, if not, the probability of spontaneous development decreases as time elapses. The objection to this policy is a social one which arises from the boy's embarrassment about his condition. Secondly, a trial of chorionic gonadotropin in doses of 500 to 1,000 units three times a week may be carried out. This may be followed by an increase in testicular size, the number of erections and, if continued long enough, other signs of pubescence. If there is evidence of stimulation after one or possibly two months, the treatment should be discontinued temporarily to see whether spontaneous progression occurs; if not, one can again proceed with chorionic gonadotropin, but testosterone is far more practical. A third form of therapy is oral administration of testosterone in small doses of not over 20 to 30 mg. a day. With primary Leydig cell failure, this may considerably increase the size of the testes, providing that extensive tubular degeneration is not present (fig. 11). This medication, too, may be prescribed for a few months only and discontinued in the hope of unaided progress. If such does not occur, it is probable that testosterone will have to be used indefinitely.

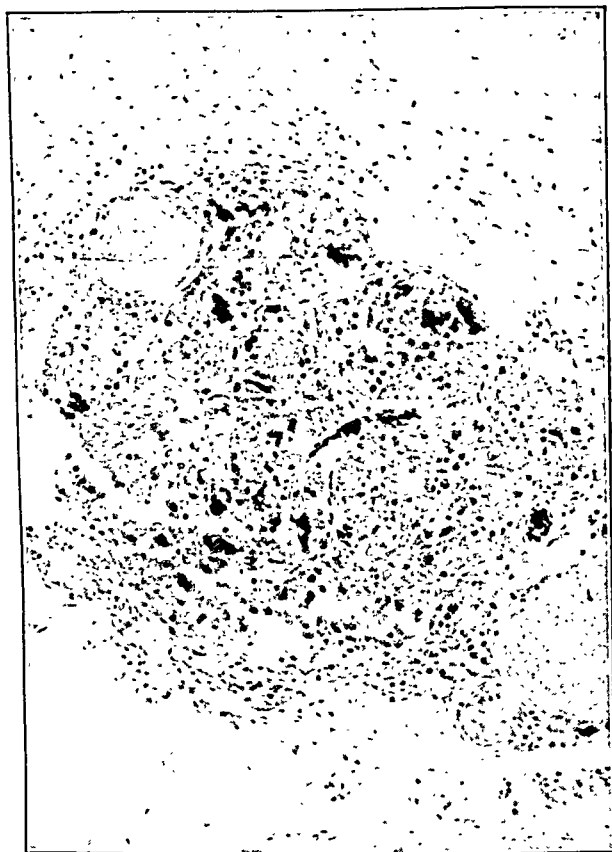


Fig. 10.—Tubular hyalinization with clumping of Leydig cells. From a case of gynecomastia and aspermia. Secondary sex development was normal, with ejaculation and libido. A few tubules remain, showing early atrophy and Sertoli's cells. Urinary follicle-stimulating hormone was strongly positive. There was 15 mg. of 17-ketosteroids per twenty-four hours (fig. 13 B).

OUTCOME OF CASES WITHOUT TREATMENT

There are three well known body types which may result from delay or failure of pubescence if untreated. The first is that of the boy who eventually matures. There may be slight eunuchoid skeletal proportions, but for all practical purposes these persons appear

normal when fully matured. The second is that of the typical eunuchoid with hypogenitalism and eunuchoid skeletal proportions, namely long arms and legs (fig. 13 A). When eunuchoidism is due to primary testicular failure there is occasionally more body and sexual hair and less skeletal change. The third is the person with gynecomastia and varying degree of eunuchoidal changes (fig. 13 B). Gynecomastia in

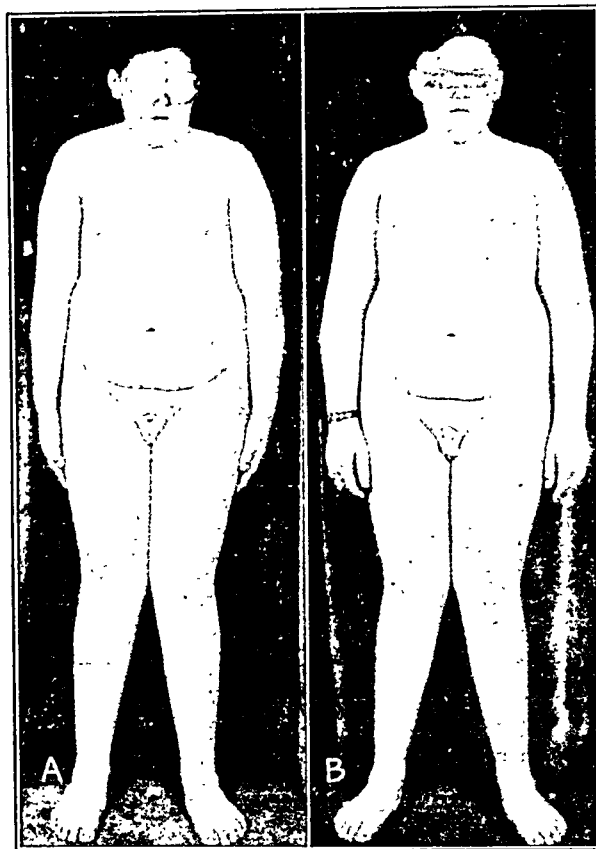


Fig. 11.—Hypogenitalism responding to testosterone. A, 14-year-old boy after one year of unsuccessful therapy with chorionic hormone, 1,000 units weekly (question of sufficient quantity). His height was 60¾ inches (154.3 cm.); his height age, 14 years; his weight was 170 pounds (77.1 Kg.); his bone age, 14; urinary 17-ketosteroids, 3.4 mg. in twenty-four hours; urinary follicle-stimulating hormone was negative on two occasions. The volume of the testes was less than 2 cc. Unsuccessful attempts were made to diet for weight reduction for three months; meanwhile there was growth of ¾ inch (1.9 cm.). B, after twenty-five days of methyl testosterone therapy, 30 mg. per day. The volume of the testes increased to 5 cc. The outcome is uncertain, but therapy is to be discontinued in hope of spontaneous progress.

these persons is probably dependent on the amount of Leydig cell function, because it parallels secondary sexual development.¹⁵ Aspermia is present due to tubular hyalinization, at least late in the disorder. The breasts show well marked and pigmented areolas.

TREATMENT

Treatment of the late pubescent boy is unnecessary unless he is obese. In fact, careful dieting is thought to hasten genital development. One must make certain when such a person is seen for the first time that sexual development is taking place in order to exclude arrest, which is possible at any age.

In persons eunuchoid because of primary testicular failure, testosterone in some form should be given as

15. Heller, C. G., and Nelson, W. O.: Hyalinization of Seminiferous Tubules Associated with Normal or Failing Leydig Cell Function: Discussion of Relationship to Eunuchoidism, Gynecomastia, Elevated Gonadotrophins, Depressed 17-Ketosteroids and Estrogens, *J. Clin. Endocrinol.* 5:1-12 (Jan.) 1945.

early as possible because of the physical as well as psychic handicap.

It is well known that the majority of these persons respond to testosterone with the development of secondary sex characteristics. The occurrence of spermatogenesis, however, is exceedingly rare. In cases of eunuchoidism or genital arrest beginning during the puberal period and reaching the age of 18 or even later, and with the testes of fairly good size and consistency, there is a chance of maturation of spermatozoa if tubular degeneration has not proceeded too far (fig. 14). I have observed a number of such cases.¹⁶ The urinary follicle-stimulating hormone in these cases has not been in excess. I have presumed that in those cases in which there has been response and in which biopsy was not performed there has been immaturity of the testes possibly based on luteinizing hormone or Leydig cell deficiency rather than absence of these hormones.

The causes of tubular degeneration are numerous and in many instances unknown. It is rather probable that hormonal failure either of the pituitary or of the Leydig cells is a cause of such degeneration. Evidence for this exists in the hyaline degenerative changes seen in the testes of persons with caromphobe tumors when a high degree of hormonal deficiency exists (fig. 9). It is reasonable to assume, therefore, that if these deficiencies can be corrected by early therapy, the chance for preventing irreversible changes and aspermatogenesis might be reduced. For this reason, testicular biopsy should be carried out more frequently in such cases in the puberal period to assess this possibility properly. Large doses of testosterone are assumed to depress testicular function,¹⁷ and although the evidence for permanent damage is not convincing, such doses should be avoided for the present. The possibility that smaller doses of testosterone or methyl testosterone may act through the pituitary has not been clearly established, but it is possible

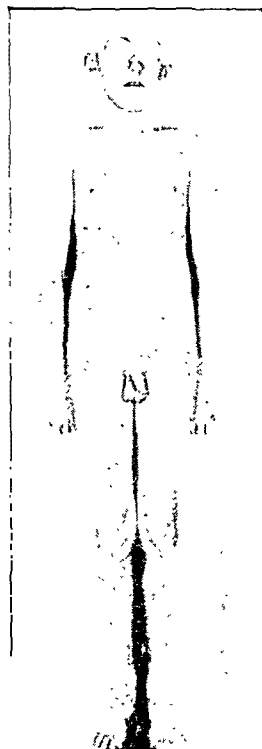


Fig. 12.—A, delayed puberty with beginning pubescence. Boy, aged 16; bone age, 14; height age, 14. Genitalia are proportionate to somatic development and cannot be considered example of hypogenitalism. Pubescence has begun. Normal development followed without therapy. At this age this might represent arrest, but school records and six months' observation demonstrated normal progress, although delayed.

that they may do so. Heller and Nelson¹⁸ reported a suppression of urinary gonadotropins with testosterone propionate but not with free testosterone implanted as

pellets. This difference as well as the effect of the less androgenic steroids in maintaining spermatogenesis in animals illustrates the complexity of the problem and demonstrates that there is still much to be learned.

SUMMARY AND CONCLUSIONS

The term hypogenitalism has been defined and its relation to the normal individual of prepubescent or pubescent age has been reviewed. For purposes of clinical recognition it has been pointed out that the establishment of retarded growth is of prime importance in distinguishing Fröhlich's syndrome, adiposogenital dystrophy syndrome and infantilism from delayed puberty or beginning eunuchoidism. The latter apparently involves only the testes or the pituitary gonadal relationship.

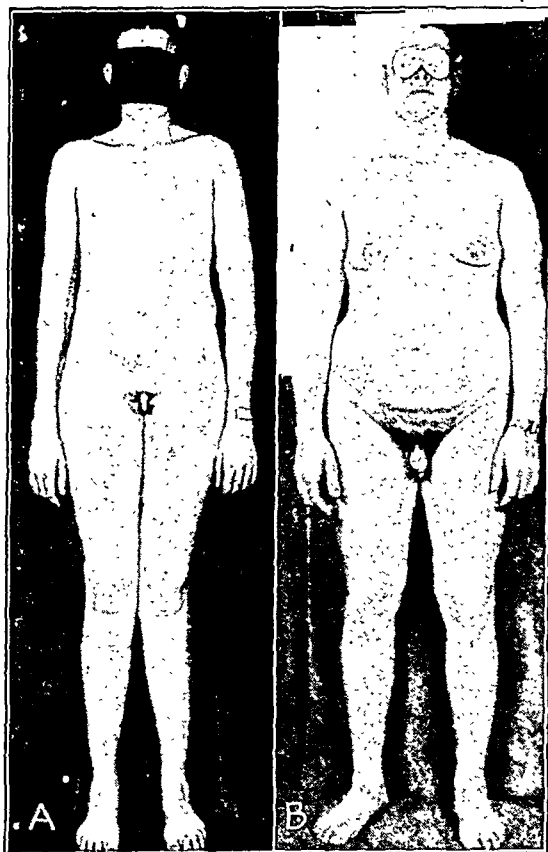


Fig. 13.—A, eunuchoidism with hypogenitalism. Male, aged 24; height, 72½ inches (183.2 cm.); span, 74½ inches (188.9 cm.). The testes were "small." The urinary follicle-stimulating hormone was negative. Urinary 17-ketosteroids were 8.1 mg. per twenty-four hours. Bone age was 15. No treatment was given until age 33, at which time his condition remained essentially the same. Methyl testosterone and testosterone propionate were used for over a year with good results. Five months after cessation of therapy a biopsy showed no Leydig cells, no peritubular sclerosis. Tubules showed spermatogonia and possibly a few spermatozoa. An ejaculated specimen showed no spermatozoa. The volume of the testes was 5 cc. (This case as well as others of the same type will be the subject of a later report.) B, gynecomastia and aspermia. The subject, aged 23, had had enlarged breasts all his life. Puberty had developed at 12, voice change at 15 and he had shaved at 17. There were normal libido and ejaculation. There were no eunuchoid changes. The patient received "arm and hip injections which increased chest and pubic hair but had no effect on genitalia or breasts." Urinary follicle-stimulating hormone was strongly positive. There was 16.4 mg. of 17-ketosteroids per twenty-four hours. There were no spermatozoa. The testes were atrophic, not over 5 cc. in volume, of mushy consistency. Figure 10 shows a photomicrograph of a similar case.

Testicular biopsy may provide immediate recognition of primary testicular failure as opposed to a theoretic selective failure of gonadotropin (luteinizing

16. Hurxthal, L. M.: To be published.

17. Rubinstein, H. S.: The Effect of Testosterone Propionate on Spermatogenesis in the Human, *South. M. J.* 32: 499-503 (May) 1939. Vest, S. A., and Barela, B., Jr.: Androgens and Treatment of Testicular Hypofunction, *Clinics* 1: 1216-1265 (Feb.) 1943. Hotchkiss, R. S.: Effects of Massive Doses of Testosterone Propionate upon Spermatogenesis, *J. Clin. Endocrinol.* 4: 117-120 (March) 1944.

18. Heller, C. G., and Nelson, W. O.: Hyalinization of Seminiferous Tubules and Clumping of Leydig Cells: Notes on Treatment on the Clinical Syndrome with Testosterone Propionate, Methyl Testosterone and Testosterone Pellets, *J. Clin. Endocrinol.* 5: 27-33 (Jan.) 1945.

hormone). Since spermatogenesis and development of secondary sex characteristics have been accomplished by the use of testosterone in hypoplastic testes without severe degenerative changes, a plea is made for earlier diagnosis and treatment in cases of this type. It is possible that failure of the Leydig cells contributes to the degeneration of the tubules in the testes in some cases of eunuchoidism or hypogonadism arising during adolescence.

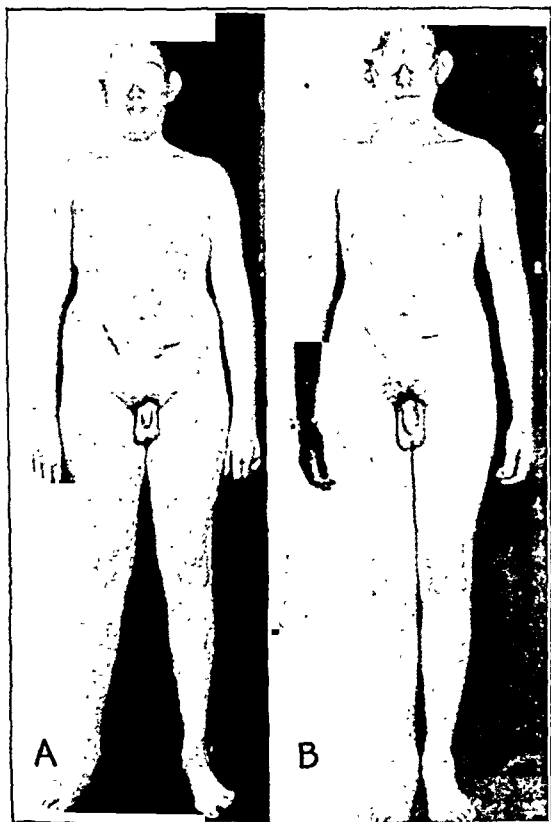


Fig. 14.—Genital arrest with testicular hypoplasia. A, 18 year old boy with puberal arrest beginning at age 15 to 16. His height was 68 inches (172.7 cm.), and his span, 68 inches; his bone age was 15 years 3 months; the urinary follicle-stimulating hormone was negative. Urinary 17-ketosteroids were 7.8 to 7 mg. per twenty-four hours. Two years later his height was 69 inches (175.3 cm.), and his span, 71¼ inches (181 cm.). There had been no genital growth; the bone age was 16.3. Urinary output of 17-ketosteroids was 10.4 mg. per twenty-four hours. B, after four months' treatment. Chorionic hormone was administered for one month, which produced some genital growth and more frequent erections. Ejaculated specimen before injections showed no spermatozoa. After three months of oral administration of methyl testosterone, 30 mg. a day, further increase in genital growth was shown. There were 2 to 3 sperms per high power field in one month after chorionic hormone therapy; there were 1,500 per cubic centimeter after two months of methyl testosterone therapy. There were many abnormal forms. (Figure 7 shows photomicrograph of testicular biopsy specimen before treatment.)

ABSTRACT OF DISCUSSION

DR. WINGATE M. JOHNSON, Winston-Salem, N. C.: My discussion will be brief and more in the nature of questioning than of addition to what Dr. Hurxthal said in his excellent paper. It has been my experience that the Fröhlich syndrome is rare. I have had about the same experience with it that Dr. Alvarez has had with brucellosis. I looked for it for a long time, but so far it has been hard to find. I think that a great many fat boys are given that diagnosis erroneously. When a fat boy like the one whose picture you saw today, and whose testicles but not whose penis could be seen, appeared in the clinic of the late Dr. Holt, he would look at him and say,

"Well, that boy has an undescended penis." I should like to ask whether bilateral undescended testicles could contribute to hypogenitalism and at what stage of development Dr. Hurxthal would recommend operation, if necessary. He spoke of using gonadotropin followed by testosterone. I should like to ask whether he always uses gonadotropin first and then testosterone, and whether the effect of the testosterone is permanent or whether the treatment has to be continued indefinitely.

DR. LEWIS M. HURXTHAL, Boston: I purposely did not discuss cryptorchidism; ordinarily the penis is of normal size in cryptorchidism, but after unsuccessful operation, in which there may be interference with the blood supply, hypogenitalism may occur which is an actual hypogonadism. Cryptorchidism may occur in a true Fröhlich's syndrome, but the hypogenitalism is because of the latter and not cryptorchidism. In cryptorchids' secondary sex characteristics may develop and normal genitalia without descent of the testes, or with successful operation to bring the testes down. The time for operation for cryptorchidism is a much disputed point. Earlier in our experience we never did anything about it until the patient was 10 or 11 years of age. I think that children past the age of 6 may be given chorionic gonadotropins for a month or two, and if no result is obtained, I would favor surgical intervention then. Such treatment may assist the surgeon because it causes the testes to become firm and makes operation easier. In regard to giving gonadotropin and testosterone, I did not mean to say that both were given simultaneously. It is well to try oral administration of methyl testosterone if gonadotropins fail. Oral administration of testosterone may be tried first and will work in some cases, as I have shown. The result of treatment with either substance may be a coincidence, but in the majority it is the cause of descent. It is best to give testosterone orally, and I think that it is well to avoid large doses such as 50 or 75 mg. a day. There is no proof that large doses do any permanent damage, although they apparently do inhibit the pituitary, at least temporarily. The question as to the necessity of using testosterone permanently depends on whether or not the boy continues to have genital development when administration of testosterone is discontinued. If regression occurs, testicular biopsy is indicated. The advisability of the future use of testosterone propionate can then in all probability be determined.

Oliver Wendell Holmes.—Let me begin with my first experience as a medical student. I had come from the lessons of Judge Story and Mr. Ashmun in the Law School at Cambridge. I had been busy, more or less, with the pages of Blackstone and Chitty, and other textbooks of the first year of legal study. More or less, I say, but I am afraid it was less rather than more. For during that year I first tasted the intoxicating pleasure of authorship. A college periodical, conducted by friends of mine, still undergraduates, tempted me into print, and there is no form of lead poisoning which more rapidly and thoroughly pervades the blood and bones and marrow than that which reaches the young author through mental contact with typemetal. *Qui a bu, boboira*—he who has once been a drinker will drink again, says the French proverb. So the man or woman who has tasted type is sure to return to his old indulgence sooner or later. In that fatal year I had my first attack of author's lead-poisoning, and I have never got quite rid of it from that day to this. But for that I might have applied myself more diligently to my legal studies, and carried a green bag in place of a stethoscope and a thermometer up to the present day. What determined me to give up law and apply myself to medicine I can hardly say, but I had from the first looked upon that year's study as an experiment. At any rate, I made the change and soon found myself introduced to new scenes and new companionships.—Rosen, George, and Caspari-Rosen, Beate: 400 Years of a Doctor's Life, New York, Schuman's, 1947.

FOLLOW-UP OF MEDICAL RECOMMENDATIONS

Results of a Health Checkup of a Group of Well
Children in Chicago

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Chicago

The need for medical services, other than for illnesses, by a large proportion of the child population has been well established through health surveys made in different sections of the country and has been dramatically emphasized by the number of selective service rejections during World War II. Although there is awareness of this problem, the task of getting defects corrected is a difficult one.

A report from one community with regard to the reasons for rejection for military service of their selectees has shown that the conditions for which the men were rejected had been noted fifteen years before in the records of their school health examinations. As the authors of this inquiry have stated: "It is particularly disturbing to find that in spite of knowing which children in a community would grow up into physically handicapped adulthood, the health professions, the lay professions, and especially society as a whole, have to date apparently failed to take full advantage of the knowledge."¹

Under the impetus of the war emergency a high percentage of corrections of defects among high school² and college³ students has been reported in connection with prehabilitation programs. The personal interest of these young persons in their fitness for military service was undoubtedly a strong motivating factor in these returns. There are no comparable figures for children, but from the past experience of school physicians and nurses it is questionable whether equally satisfactory results would have been achieved, even during the war years, with children.

For a number of years the Elizabeth McCormick Memorial Fund has been concerned with the follow-up by parents of recommendations made at the time of a health check-up of their children. Results from a recent investigation with families of low income bear directly on this question of the amount of remedial and preventive services preschool and school children actually receive.

A brief summary is here reported of the data from a follow-up of medical examinations of a group of 1,068 Chicago children representing 446 families. Examinations were made by the pediatric staff of the Elizabeth McCormick Memorial Fund between September 1942 and August 1943.

The inquiry was a part of a joint investigation conducted with the Aid to Dependent Children Service of the Cook County Bureau of Public Welfare regarding the community resources for meeting the health needs of children under the supervision of this welfare agency. The children were living with one or both parents or with a close relative who maintained a home for them. They were receiving grants as dependent children because they had been deprived of parental support or care by reason of death, continued absence from the

home or incapacity of either or both parents. In most of the cases the mother was in the home and the father was dead.

A small number of the families had their own physicians, but for the most part they had to rely on clinic facilities for whatever medical attention they received. Their average annual incomes were around \$1,100 (1942-1943).

The children were so-called well children, none of whom was under the supervision of a health agency or was registered at a clinic. They were selected from all areas of the city. An effort was made to have the racial distribution in each district correspond to that of the welfare caseload of that district.

No pressure was exerted to force the family to have the children examined. If the parent or guardian was interested in the health check-up, an appointment was scheduled. Examinations were always made in the presence of the adult who supervised the child's daily program—usually this was the mother.

Pertinent facts about the family were secured from the case worker prior to the date of the appointment, and further history concerning the health and development of the individual children was given by the mother when she appeared for the examination. The physician had an opportunity to read over this record before he saw the child. Young children and boys were examined without clothing. Older girls were stripped to the waist. Shoes and stockings were always removed.

The group participating in the study included 532 boys and 536 girls. Their average age was 10 years—20 per cent of them were between 2 and 6 years of age, and a like proportion had passed their twelfth birthday at the time of their health check-up. In most cases at least 2 children per family were examined, the average number being 2.4.

After the completion of the health check-up of a family group, the physician talked with the mother about the remedial care and immunizations which the children needed. Immediately after the medical conference a nutritionist conferred with the mother on plans to improve the family diet and other health habits. At this time the mother was given a written memorandum of the recommendations made by the physician and the nutritionist. She was also informed that her case worker would help her to arrange to obtain the advised health services.

Although the families included in this investigation were receiving financial assistance, there is no reason to assume that their attitudes toward health differ from those of other families of low income in the general population. They indicated their interest in the health of their children by bringing them to the examining center for a physical check-up. They were there made aware of the health needs of their children and were later given assistance in locating the proper facilities for the services advised. Under these conditions the facts with regard to the care actually secured for the children should be particularly revealing as to the problems which low-income families encounter in a follow-up of medical examinations of their children.

PLAN FOR FOLLOW-UP

In this inquiry the follow-up involved three procedures: to assist the family to plan ways and means of securing the advised health services; to check with them from time to time and to urge that appointments with physicians and with clinics be kept; and, finally, to check with the health agencies on the care actually

Chairman, Child Research, Elizabeth McCormick Memorial Fund.
1. Cicco, A.; Klein, H., and Palmer, C. E.: Child Health and the Selective Service Physical Standards, *Pub. Health Rep.* 56: 2365-2375 (Dec. 12) 1941.
2. Wilzbach, C. A.: Physical Fitness Program: A Report of Medical and Dental Examinations of 5,620 Senior and Junior High School Students, *J. A. M. A.* 125: 828-830 (July 22) 1944.
3. Cureton, T. K.: The Unfitness of Young Men in Motor Fitness, *J. A. M. A.* 123: 69-74 (Sept. 11) 1943.

secured. Full responsibility for this part of the investigation was assumed by the Aid to Dependent Children Service. Visits to the homes of the children who required care were made by the case workers as soon as possible after a report of the physician's recommendations was received.

There were only 5 of the 446 families represented in the group examined that did not require some type of health service. Usually 2 or more children in each family needed attention for a number of different remediable conditions. The plan to obtain the required care depended on locating the proper health facilities and arranging for services within the framework set up by the community or the responsible agency for remedial and preventive services to families of low income.

During the years covered by this study—September 1942 to January 1946—changes in the size of the selected group would be expected. Some families moved away; others became completely self-supporting because of increased wages of the mother or other members of the family and consequently were no longer under the supervision of the agency; in others, the children who had been advised to have care were out of the home. No follow-up was possible in the case of 39

the mouth and teeth rather than on an examination by a dentist. Incidence under these conditions would no doubt be underestimated.

A summary of the professional services advised for these children is presented in table 1, for white and Negro children separately, in terms of the type of care recommended—medical, dental or immunization. The large majority of the children were in need of some type of health service—97 per cent. Medical attention was advised for 73 per cent (65 per cent of the white and 80 per cent of the Negro); dental services for 67 per cent (75 per cent of the white and 59 per cent of the Negro), and protection against either diphtheria or smallpox for 53 per cent (46 per cent of the white and 61 per cent of the Negro children).

The incidence of health problems among this group of dependent children appears to differ little from that noted in previous reports for other income groups. Comparative data are cited in table 1 from a marginal economic class, which includes families having annual incomes around \$1,200 in 1940 and from an economically independent class having incomes in the average or upper brackets—most of them ranging from \$2,000 to \$4,000. The results of the present investigation are in agreement with those of other studies⁴ in showing that

TABLE 1.—Frequency and Types of Health Services Advised

Comparisons of Data on 1,068 Chicago Children Receiving "Aid to Dependent Children" Grants in 1942-1943 with that for 2,784 Children from Nonrelief Families, According to Race.⁴

Health Services	White Children								Negro Children							
	A. D. C. Total		A. D. C. Followed		Marginal Class		Independent Class		A. D. C. Total		A. D. C. Followed		Marginal Class		Independent Class	
	516		349		534		1,831		652		410		153		266	
Total cases.....	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
None recommended.....	20	4.0	0	....	44	8.2	173	9.4	15	2.8	0	....	3	2.0	38	14.3
Medical care.....	336	65.1	223	63.9	344	64.4	1,083	59.1	442	80.1	349	79.3	118	77.1	157	70.3
	388	75.2	250	71.6	315	58.9	916	51.6	323	58.5	260	59.1	70	45.8	98	36.8
	176	34.1	125	35.8	195	36.4	685	37.4	223	40.4	187	42.5	50	32.7	79	29.7
	115	22.3	85	24.4	132	24.7	370	20.2	221	40.0	179	40.7	31	20.3	58	21.8

families, and 74 other families were lost before they had obtained any of the recommended services.

The follow-up records consist of progress reports submitted by the case workers and information obtained from clinics, private physicians and dentists and from the Chicago Health Department. Cumulative health service records are available for 789 children representing 328 families. These families were still under the supervision of the agency at the conclusion of the investigation or had carried through at least a part of the plan for care before their cases were closed. Their follow-up records extend over approximately two and a half years.

GENERAL TYPES OF HEALTH SERVICES ADVISED

The health services advised by the physician were for many different types of conditions. Remedial care was recommended in cases in which (1) specific conditions were judged to deviate from the normal to the extent that professional services were advisable or (2) symptoms or history indicated a need for further examination or treatment. Vaccination against smallpox was recommended in cases in which a scar was absent. Immunization against diphtheria was advised for young children who had never been given toxoid injections. The Schick test was advised for the older children who had no history of this protection and for those who had had none since infancy.

Recommendations for dental care were based on the judgment of a physician after a general inspection of

the majority of children regardless of the income level of the family are likely to be in need of medical attention.

Follow-up records on the health services obtained are available for 3 of every 4 of the selected Aid to Dependent Children group. Inspection of the second columns of the two sections of table 1 shows that the health needs of this "followed group" are representative of those of the total white and Negro groups examined. The remainder of this report will be concerned with the services secured for the 789 children included in the follow-up study.

The observations are organized around three major questions: (1) To what extent were the physician's recommendations regarding the individual child's needs carried out, (2) what effort was made by the family to secure the health services advised and (3) what reasons were given by the families for their failure to obtain the care recommended?

HEALTH SERVICES OBTAINED

Analyses of the records of the 789 children comprising the followed group indicate that attention to some of their needs was secured in the majority of cases but that less than one third of the children obtained all the care advised. "All care obtained" is here interpreted as services received and patient either discharged or continuing under professional care as instructed.

4. Hardy, M. C.; Boyle, H. H., and Newcomb, A. L.: Physical Fitness of Children from Different Economic Levels in Chicago, J. A. M. A. 117: 2154-2161 (Dec. 20) 1941.

Results as to the amount and type of professional services obtained for the children in this study are given in tables 2 and 3. A general summary of the data in terms of broad categories of the type of attention required is given in table 2. The categories refer to recommendations for medical care, dental care and immunizations. An over-all classification of professional health services is used to point up the amount of care secured, regardless of the type. Table 3 gives the results with respect to specific recommendations and shows whether or not an effort was made to obtain the needed services.

Care has been assumed when the records indicate that any part of the recommendations made by the examiner had been carried out. Services were considered as completed when care had been secured for all the conditions requiring attention or when care was in progress. Cases in which service was obtained (but not for all problems) or was incomplete were classified as "obtaining some care." This description

TABLE 2.—*Health Services Obtained*

General Summary for 789 Chicago Children Receiving "Aid to Dependent Children" Grants, 1942-1945

Health Services	Total Children		White Children		Negro Children	
	No.	%	No.	%	No.	%
Total health services *						
In need of service.....	784		345		439	
Obtaining all services advised.....	245	31.3	130	37.7	115	26.2
Obtaining some of services advised.....	346	44.1	118	34.2	228	51.0
Obtaining none of services advised.....	193	24.6	97	28.1	96	21.0
Medical care						
In need of care.....	572		223		349	
Obtaining all care advised.....	211	36.9	98	44.0	113	32.4
Obtaining some of care advised.....	87	15.2	23	10.3	64	18.3
Obtaining none of care advised.....	274	47.9	102	45.7	172	49.3
Dental care *						
In need of care.....	510		250		260	
Obtaining all care advised.....	262	51.4	141	56.4	121	46.5
Obtaining some of care advised.....	36	7.0	10	4.0	26	10.0
Obtaining none of care advised.....	212	41.6	99	39.6	113	43.5
Immunizations						
In need of service.....	452		177		275	
Obtaining all service advised.....	371	60.0	94	53.1	177	64.4
Obtaining some of service advised.....	24	5.3	9	5.1	15	5.5
Obtaining none of service advised.....	147	32.5	74	41.8	73	26.5

* Excluding orthodontia.

covers the following types of situations: (1) when correction or treatment was reported for one or more but not for all of the conditions requiring care; (2) when remedial services were begun but not continued, and (3) when further diagnosis was secured as advised, but the recommendations for treatment were not carried out. The classification of "no care obtained" includes, in addition to those who never reported for attention, cases in which the child left before the examination was completed and did not return and those in which the child failed to report to the special services to which he was directed by the clinic, e. g., eyes, orthopedic or surgery.

Reference to table 2 reveals that 75 per cent of this group of children secured at least a part of the care advised for them. In the two and a half year period covered by the follow-up study the recommendations for special health services were carried out fully, as here interpreted, for 38 per cent of the white children and 26 per cent of the Negro children. At the conclusion of the follow-up investigation there were still 69 per cent of the children who had some unmet health needs for which professional service had been recommended by the physician.

These unmet health needs were most often those requiring medical care. Comparative frequencies of the amount of care obtained indicate that: 37 per cent of the children needing medical care secured all that was advised; 51 per cent of those needing dental care received it; and 60 per cent of those advised to be immunized against certain diseases completed this service.

Whether or not recommendations for medical services were carried out appears to have been related to the type of medical attention needed. Services involving surgical intervention or treatment were less frequently completed than those in which further observation and diagnosis or preventive measures were recommended. It should be noted that surgical procedures and treatment are types of care which may necessitate repeated visits to the clinic or supervision over an extended period of time. The proportion of the recommendations for different types of medical services which were carried out fully was as follows: 64 per cent of the recommendations for preventive measures; 56 per cent of those for further diagnosis; 44 per cent of those for treatment, and 36 per cent of those for surgical care. A summary of these data is given in table 3 in terms of the attention received for specific recommendations: whether the patient secured the service and continued as instructed, discontinued before care was completed or did not attempt to obtain service.

Although the type of care needed was a factor in the completion of the recommended care, there was little indication that among the families in this study it had any influence in determining whether the child would be taken to a physician as advised. At least one visit was made to secure the medical attention recommended in the case of most of the conditions under each classification. Differences between the various types of medical services with respect to the family's attempt to obtain care were negligible in size.

Negro families were more likely to make some effort to secure the advised services than were the white families but were less likely to continue the service as instructed. A larger proportion of the Negro children than of the white children were taken at least once to a clinic or a physician's office for the attention recommended. Decided differences between the groups were noted for each type of medical service except that requiring treatment, in which case the same proportion of Negro and white children reported for care. However, fewer Negro than white children continued under care till the service was completed. The only type of care which the Negro children followed through to the extent that it was carried out by the white children was that for immunization.

Extent of Medical Care for Certain Health Problems

The most frequent specific problems noted by the physicians as requiring medical attention concerned tonsils, orthopedic abnormalities, eyes, conditions of the genitourinary system and of ears and skin. The incidence varied from 31 per cent in the case of tonsil conditions to 6 per cent for skin.

Either removal of the tonsils was definitely advised or their condition was noted for further observation in the case of a large number of the children. Most of these children so advised made one or more visits to a physician or to a clinic regarding this problem (71 per cent). Among those who reported for care, the need for removal was confirmed in 4 of 5 cases, according to the records at hand. Tonsillectomies were performed on 18 per cent of the children referred, and an additional

11 per cent were either under care preparatory to the operation or were on a waiting list for hospital admission at the conclusion of the follow-up. In 29 per cent of the cases, apparently no effort was made by the family to do anything about this recommendation of the examiner. It is highly probable that some of these families were discouraged from taking their children for tonsillectomies because they were aware of the long waiting lists of the clinics and hospitals, at that time. Then, too, shortly after the recommendations were made Chicago had an outbreak of poliomyelitis during which physicians advised that operations on the throat be delayed unless the condition was urgent.

The incidence of foot abnormalities ranked high among these children. Here, again, the need for correction was confirmed by later clinic examinations in

Signs of nutritional inadequacies were of frequent occurrence among these children, but relatively few children were considered to need special medical attention for the condition. Half of these obtained the care recommended for them, but more than a third of them failed to report for the service advised.

Care for an umbilical hernia was recommended for a number of the children in this study. At the time of the final records, 10 per cent of these children were receiving care, 16 per cent had been discharged as requiring no treatment and 42 per cent had failed to continue under care as instructed by the clinic. In a third of the cases this type of recommendation was entirely disregarded by the families.

There were 26 children in this follow-up study for whom in the judgment of the physician an examination

TABLE 3.—*Specific Health Needs*

Extent of Services Obtained for Certain Specific Health Needs of 789 Chicago Children Receiving "Aid to Dependent Children" Grants, 1942-1945

Recommendations for Health Services	No.	Services Obtained					Reported: Failed to Keep Later Appointments		Never Reported for Care	
		Completed No.	Continuous Care No.	Waiting List No.	No Care Advised No.	Total No. %	No.	%	No.	%
Remedial care *										
I. Surgery: Total.....	(340)	..	..	..	..	(121) (35.6)	(112)	(32.9)	(107)	(31.5)
T and A.....	241	29	3	21	26	79 32.5	73	31.6	69	29.9
Circumcision.....	76	13	..	5	6	24 31.6	26	34.2	26	34.2
Hernia.....	31	..	3	..	5	8 25.8	13	41.9	10	32.3
Others.....	2	..	..	..	..	..	..	..	2	100.0
II. Observation and diagnosis: Total	(267)	..	..	..	..	(207) (56.4)	(49)	(13.4)	(111)	(30.2)
Eyes.....	103	31	5	..	8	47 43.5	23	21.3	28	35.2
Heart.....	26	..	6	..	7	13 50.0	7	26.9	6	23.1
Ears.....	20	11	1	..	12	60.0	5	15.0	5	25.0
Nose.....	13	3	..	..	2	5 38.4	4	30.8	4	30.8
Nutrition.....	13	6	2	..	7	53.8	1	7.7	5	38.5
Tonsils.....	11	6	3	..	1	9 81.8	..	..	2	18.2
Genitourinary.....	11	1	3	..	4	36.4	2	18.2	5	45.4
Respiratory.....	10	6	..	..	6	60.0	..	..	4	40.0
Allergy.....	9	4	1	..	6	66.7	1	11.1	2	22.2
Eureasis.....	6	1	..	..	1	16.7	2	33.3	3	50.0
Spine.....	4	1	..	..	1	25.0	..	..	2	50.0
Tuberculin test.....	64	46	3	..	49	77.8	1	1.6	13	20.6
..	32	17	..	..	17	53.1	3	9.4	12	37.5
..	15	15	..	..	15	100.0	..	..	..	..
..	9	3	1	..	4	44.4	..	..	5	55.6
Others.....	17	8	1	..	10	58.8	2	11.8	5	29.4
III. Treatment: Total.....	(94)	..	..	..	..	(435) (46.1)	(112)	(11.9)	(397)	(42.0)
Feet.....	171	43	2	..	20	65 38.0	55	32.2	51	29.8
Skin.....	44	16	4	1	3	24 54.6	6	13.6	14	31.8
Ears.....	35	20	..	..	1	21 60.0	4	11.4	10	28.6
Speech defect.....	8	2	..	..	1	3 37.5	1	12.5	4	50.0
Others.....	4	..	1	..	1	25.0	2	50.0	1	25.0
Dental care.....	459	220	13	..	2	235 51.2	37	8.1	187	40.7
..	135	69	5	..	2	76 56.3	7	5.2	52	38.5
..	88	..	8	..	2	10 11.4	..	..	78	88.6
Preventive.....	(576)	..	..	..	..	(369) (64.1)	(18)	(3.1)	(189)	(32.8)
..	312	212	..	..	..	212 68.0	6	1.9	94	30.1
..	264	156	..	..	1	157 59.5	12	4.5	95	36.0
Total recommendations.....	2,227	650	65	27	90	1,132 50.8	291	13.1	804	36.1

* Including orthodontia.

the case of the majority of those for whom the records are available, but only 20 per cent of these secured the service advised. A relatively large number of those who had foot abnormalities either failed to report at all or did not go to the orthopedic clinic as directed.

Other conditions for which orthopedic care was recommended concerned defects of the spine. Few cases were involved, but only half of the children received any attention—the others were never taken for care.

Recommendations for remedial services for eyes, ears and nose were based on inspection at the time of the examination—eyes by general inspection and ears and nose with an otoscope. Tests of visual acuity and of hearing were not made. Approximately 2 of 3 of those who were advised to have care received some attention. Most of the children who reported for further examination of the eyes and ears required corrective treatment.

by a heart specialist was indicated. The records show that 20 of these children reported for further diagnosis—13 were found to require special attention, but only 6 of these continued under medical supervision. In other words, 50 per cent of the children whose cardiac condition seemed questionable at the time of their general health checkup were later given a definite diagnosis of cardiac disease or were referred for more tests and observation before the final diagnosis. Half of these cardiac patients or suspects did not receive the professional attention recommended for them. Some of these children made several visits to the clinic but failed to keep later appointments as instructed. Others did not return after the diagnosis. Although the number of cases here involved is small, the problem is recognized as a serious one and hence implications of the observations on care received are considered to be particularly significant.

The fact that 23 per cent of the children who were referred to a cardiac clinic failed to go and an additional 27 per cent who were known to require supervision were not receiving it would certainly suggest a lack of understanding on the part of the parents of the importance of remedial services. If this large a proportion of the children who had a suspected cardiac involvement was without care, it is not surprising to find that many other conditions were neglected by the families.

The Number of Health Problems as a Factor in Medical Care Obtained

From the analyses of the cumulative health records of the children in this study there is evidence that the more conditions the physician cited as requiring medical attention the better the child's chances were of getting to a physician or a clinic. Children having only one type of health problem, regardless of the seriousness of the condition, were less likely to be taken for care than were those having three or more conditions for which care was advised. It is not unlikely that the mere fact that more time was required at the health check-up for the physician to interpret several recommendations to the mother served to stress the needs of these cases and impressed her with the importance of medical care for them. Relatively few children having as many as three conditions for correction or treatment failed to report for the advised services.

With respect to the completion of the services the situation was reversed. The child having only one or two health problems, if he received any medical attention, was more likely to have the recommended service completed than was the child who had many conditions for which care was advised. Children having many problems were more likely to discontinue the service before all the corrections had been completed than were those having few problems. In the order of the number of problems mentioned by the physician as requiring medical services, the figures show that 45 per cent of the children having one condition for care, 31 per cent of those having two conditions, 26 per cent of those having three conditions, and 15 per cent of those having four or more conditions continued under care until discharged. These successive differences are relatively small in some comparisons and are not all statistically significant, but they are consistent in direction and some of the differences are large.

The trend of these data is suggestive of the influence of the number of specific health problems indicated by the physician at the time of the examination in determining whether the recommended care will be obtained. These results clearly point to the need for increased emphasis on securing and maintaining the interest and full cooperation of the parents in whatever is advised for the children.

Dental Care Obtained

It was stated earlier in this report that the incidence of dental needs as given in this study is probably an underestimation of the extent of the dental problem among these dependent children, since examinations were not made by a dentist. Nevertheless, in the judgment of the physician most of the children were in need of dental care.

The sources of care used by the families, according to the reports at hand, were in the order of their frequency: clinics, dental services in public schools and private dentists. In planning with the family ways

and means to arrange for dental care the case workers recognized the lack of facilities for orthodontia that are available to families of low income and made no attempt to assist them in obtaining this type of care. Recommendations for orthodontia have, therefore, been eliminated from the analyses summarized in table 2. Observations on this problem are, however, included among the specific recommendations given in table 3.

In general the figures with respect to dental care obtained show a similar trend to those for medical services, although more of the children were reported to have completed the dental care than was the case with medical care. Reference to table 2 shows that more than half of the children who were advised to have dental care secured it and most of them completed the services, as here interpreted. Among the white children 56 per cent and among the Negro children 47 per cent were reported to have completed the recommended dental services, exclusive of orthodontia.

Carious teeth was the most frequent type of physical defect observed among these dependent children, as it has also been among other groups of children. Information on the extent of care received for this defect is given in table 3. The majority of the children with dental caries were taken to a dentist, and most of them completed the treatment. However, a large number of children who needed remedial care never reported for it.

Orthodontia was advised for 11 per cent of the children included in the follow-up study. In 23 cases—15 white children and 8 Negro children—this was the only dental need observed by the physician. Although no provision for this type of service was planned by the case workers, through special arrangements a few families were able to obtain care. Treatment was reported to be in progress for 8 children.

Immunization Obtained

Recommendations for immunization concerned the need for vaccination against smallpox and for protection against diphtheria—either toxoid or the Schick test as the history indicated. Of the health services advised for the children, these immunizations were the most readily and conveniently secured in Chicago. They were also one of the most difficult of the services to verify.

More than half the children included in this study were in need of one of these measures, and for approximately 1 of 4 of them both measures were recommended. The advised protection was obtained by 60 per cent of these subjects, and an additional 8 per cent received one of the two recommended immunizations—usually a diphtheria-preventive measure.

At the time of the health check-up a third of the group had not been successfully vaccinated against smallpox. In most of the cases vaccination had never been performed. From the follow-up records it is estimated that 64 per cent of those for whom vaccination against smallpox was recommended reported to a center for this protection. In most of these cases the reaction was said to be positive, but in a few cases the result was not known.

Protection against diphtheria was advised for 312 of the children. Of these, 70 per cent reported for immunization and most of them completed the necessary injections. However, 30 per cent of the children for whom either a Schick test or diphtheria toxoid had been recommended failed to report for these measures during the period covered by this study. This number included both preschool and school children.

As previously mentioned, of all the services recommended for these Chicago children, immunizations were the most conveniently obtained by families of low income. It is therefore of particular interest that among the families represented in this investigation failure to report for this type of service was no less frequent than for other types of care.

SIZE OF THE FAMILY GROUP AS A FACTOR IN THE HEALTH SERVICES OBTAINED

The number of children examined per family included in this follow-up study ranged from 1 child to 9 children. Among the 328 families represented there were only 29 children who did not require some type of professional attention. The average number in need of care among the white families was 2.5 children and among the Negroes was 2.3.

It has been noted that each child usually required care for several different conditions. In many instances the plan arranged to obtain the recommended services necessitated visits to a number of health facilities. More than a third of the families were referred to at least

Of the services advised, medical care was the most frequently needed and the least often secured by these families. Some type of medical service was recommended for 1 or more children in 9 of 10 of the families in the study. The majority of them took some steps toward carrying out the physician's recommendations, and 54 per cent of the families completed the services for at least 1 child in the family. An additional 12 per cent of the families obtained care for some of the health needs of all their children. However, 1 of every 5 families whose children required medical care made no attempt during the two and a half years of the follow-up to secure it. A graphic presentation of these data is given in the accompanying illustration.

Whether or not the recommended services were obtained appeared to be somewhat influenced by the size of the family group requiring attention. The average number of children in need of care among the families that completed the services was 1.8 per family, among those obtaining some service, 2.6 and among those failing to secure any professional care, 2.8. The figures on extent of care obtained by families with 1, 2

TABLE 4.—*Health Service to Families*

Amount of Health Service Obtained by 328 "Aid to Dependent Children" Families in Chicago for 789 Children in Need of Some Type of Service, 1942-1945

	Total Families		Race Comparisons				Size of Family Group			
			White		Negro		One Child		Two or More Children	
	No.	%	No.	%	No.	%	No.	%	No.	%
Total health services	(328)		(140)		(188)		(90)		(238)	
All services	84	25.6	52	37.1	32	17.1	42	46.7	42	17.6
Some service	58	17.7	17	12.1	41	21.9	..	...	58	24.4
Some service	79	24.1	19	13.6	60	32.1	40	44.4	39	16.4
Some service	25	7.6	12	8.6	13	7.0	..	...	25	10.5
Some service	51	15.5	26	18.6	25	13.4	..	...	51	21.4
No service obtained for any child—reported	7	2.2	1	0.7	6	3.2	1	1.1	6	2.6
No service obtained for any child—never reported	24	7.3	12	8.6	12	6.4	7	7.8	17	7.1
Medical care	(295)		(122)		(173)		(74)		(221)	
All care obtained for all children	101	35.3	58	47.6	46	26.6	44	59.5	60	27.2
Some care obtained for all children—some completed	16	5.4	4	3.3	12	6.9	..	...	16	7.2
Some care obtained for all children—all incomplete	19	6.5	7	5.7	12	6.9	5	6.7	14	6.3
Some care obtained for some children—some completed	39	13.2	10	8.2	29	16.8	..	...	39	17.6
Some care obtained for some children—all incomplete	16	5.4	6	4.9	10	5.8	..	...	16	7.2
No care obtained for any child—reported	42	14.2	7	5.7	35	20.2	16	21.6	26	11.9
No care obtained for any child—never reported	59	20.0	30	24.6	29	16.8	9	12.2	50	22.6

three different places—a few to as many as five centers—which often were a considerable distance apart. It is obvious that the problem of securing attention for all the health needs of the family group was not a simple matter for some of the families. Under these conditions, it is particularly interesting to find that 67 per cent of them obtained some service for every child in the family group that needed attention. Only 7 per cent of the families failed to report at least once to either a clinic or a private physician or dentist for some part of the services advised.

The extent to which recommended services were completed for all children in a family is indicated in table 4. Comparisons as to race and size of family are shown. The size is given in terms of one-child versus larger family groups, since the trend of the results in families of 2 or more children was similar. The table presents the over-all picture as to total professional services and as to those requiring medical services.

Approximately 1 in 4 families carried out all the recommendations made by the physician, and a like proportion completed the services for 1 or more children but not for the entire group. In other words, in half of the families some child received all the professional care advised for him. This was usually the child who had the fewest health problems.

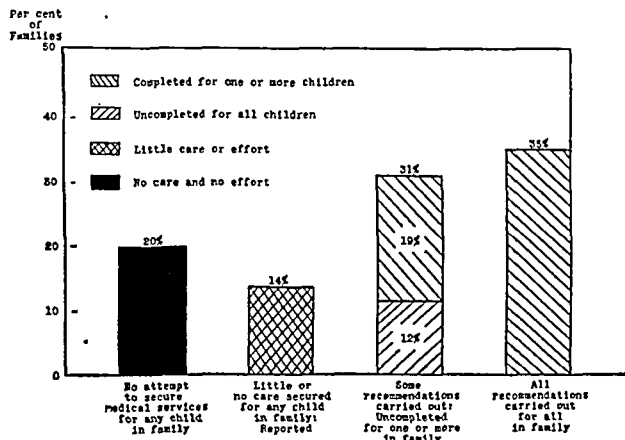
and 3 or more children were: completed services, 47, 29 and 10 per cent; some service, 45, 65 and 78 per cent; no health service, 8, 6 and 12 per cent, respectively. It is evident from these comparative observations that the large family groups were as likely to obtain some care for their children as were the small families, although they were less likely to secure all the advised services. Among both the white and Negro families the size of the family group appeared to influence the amount of care obtained for the children.

With respect to medical care, all recommendations were carried out, as here interpreted, by 60 per cent of the one-child families and by 27 per cent of the larger family groups. In more than half of these larger families some of the children received all the service advised, and in still others some medical attention was obtained for all the children in need of it, although care was not completed for any of them.

These results clearly indicate that an attempt on the part of most of the families in this study was made to secure remedial and preventive care for their children, regardless of the size of the family group and other difficulties encountered in obtaining the required service. The effort put forth by these families that failed to carry out the recommendations is suggested by the figures in table 5.

REASONS FOR UNMET HEALTH NEEDS

In spite of some effort on the part of most families represented in this investigation, approximately half of the children who should have had medical attention failed to receive it. One or more children from 53 per cent of the families secured none of the medical



Extent of recommended medical services secured by 321 families for their children.

service advised for him. Why were the physician's recommendations not carried out? It was certainly not because these parents were uninterested in the welfare of their children. All of them had demonstrated their concern for the health of their children by accepting the opportunity to have them examined by a physician and by bringing them for the physical check-up—sometimes from a considerable distance. It was not because they did not know how to go about securing the recommended services, since all of them who did have a family physician were given assistance. Case workers aided them to locate the proper facilities where care could be obtained and also informed them as to the arrangements necessary to secure the required services. Why then did so many of these families fail to obtain the care advised for their children?

The explanations given by the families may not, and probably do not, reveal the real reasons for the unmet health needs of this group of Chicago children. However, their verbal reports should reflect significant attitudes on the part of these parents toward the health problems of their children and should serve to indicate some practical difficulties in the existing system of clinic services, particularly as it affects large families with small children.

The reason most frequently expressed by the families for their failure to return for care, and also for their failure to report at all, was that the children seemed well. They believed that the recommended health services were really not necessary because the children had no special complaints. In some of these cases, the mother indicated that the symptoms for which medical attention had been advised were still present but did not bother the child, or she thought that he would outgrow them as his older brother had. Most of these families had reported for some care, a number of them several times before discontinuing the services. By their own statements, however, they were not particularly impressed with the importance of remedial and preventive services for well children.

Various types of conditions relating to the general character of the services obtained and to the difficulties encountered in making use of facilities were complained of by these families. In some instances they refused to return to the clinics to which they were referred. In others they agreed to return but failed to do so, although they continued throughout the period of follow-up to express their intention to complete the services recommended. They objected to the duplication of the health check-up with no additional service provided at the time of the first clinic visit. It seemed to numbers of them that the clinic failed to realize the difficulty that the mother faced in keeping the various appointments for individual children made for different times instead of for the family as a group. Many complained of the numerous visits to different specialized clinics before the advised care for even one child could be carried out. They referred to the great distances they had to travel, the problem of taking a number of children to and from clinics, the long waits at the clinics and the children's unwillingness to continue under clinic care.

Unquestionably the long distances which some families had to travel to the clinics made the process of carrying out the recommendations a difficult one. The situation was further complicated for many of them by the fact that visits had to be made to more than one clinic. Merely to get the children to the different places where the recommended services could be started often entailed much effort and time. Although distance from the facilities was a seriously complicating factor in many instances, in none of the families did it appear to be the major factor involved in the extent to which recommendations for medical care were carried out. A map distribution of the addresses of the families and of the clinics to which they were referred showed that some of the families having the greatest distances to travel secured all the services advised for their children, while some families living within a few blocks of the clinics never reported at all.

During the years covered by this follow-up investigation there was a shortage of physicians and nurses, and long waits in physicians' offices and in outpatient departments of hospitals were of common occurrence in large cities all over the country. Since few of the clinics in Chicago operate on an appointment system—

TABLE 5.—Effort to Secure Recommended Care

Families on the waiting list for hospital care.....	4*
Families failing to return to complete some services.....	153
Families failing to return—all care incomplete.....	6
Families failing to report for some specialized care.....	54
Families failing to return for any care—reported only once, no care received.....	7
Families failing to report at any time.....	24
Total.....	248

* Summarized in tables 2 to 4 as receiving care.

other than specified days for special services or when certain physicians are available—the waiting periods for many of these families were frequently exceedingly long. In addition to the time involved there was the restlessness and discomfort of the children, as the rooms in which they waited were often overcrowded, with hard benches the only seating arrangement. Then, too, after the family had received some medical attention, if hospitalization or surgical treatment was required immediate care was usually not possible. The case would be placed on a waiting list. These conditions

tended to discourage even the most cooperative parents. For those who were not thoroughly convinced of the need for medical service, they were not infrequently sufficient reason for doing nothing about the recommendations.

The fears of the children and their unwillingness to continue under clinic care, with the consequent problem of forcing them to go, were mentioned as real difficulties in getting the required care completed. At the time of their health check-up the ages of the children ranged from 2 years to the early teens, the majority being between 6 and 12 years of age. This would mean that in the final year of the follow-up many of the children were old enough to go to the clinics alone. The records show that in a number of instances this did occur. It is not unlikely that the completeness of the health services in some family groups is directly related to the ages of the children needing care. In these cases, boys and girls sufficiently interested in their health condition might report regularly for the care advised and others in the family might never be taken to a clinic. Again, the older children might refuse to continue the services and the younger ones receive all needed attention. The age factor appeared to operate in both directions, as far as could be judged from the records. It was definitely associated with the completeness of dental care and immunization, perhaps largely because of the availability of facilities for these services in the schools and their accessibility to school children.

Less frequent explanations concerned family situations and behavior problems of the children, which at the time overshadowed the health needs; physical disabilities of the parent, which made trips to clinics difficult; home management problems (such as large households, invalids in the home to care for and no one to leave in charge of the household), and rejection of any type of medical service.

A few of the families refused to permit the remedial measures recommended. Surgical intervention was the service usually opposed by these families. In a small number of cases the records indicate the lack of interest of the mother and her unwillingness to cooperate with the worker and the clinic.

Arrangements to secure the needed services were worked out between the case workers and the families. There is some evidence, however, that the plan suggested by the case worker was not always satisfactory or entirely acceptable to the family. In some instances the facilities suggested were the only ones available to these families for the services required; in others they were mentioned because some member of the family had previously been treated at these clinics. In a relatively large number of the cases it was apparent from the records that the worker had either not given sufficient thought to the type of community resources which would best serve the needs of a particular family or that the framework within which this public agency operated did not permit a satisfactory plan. Many of the clinics to which families were referred offer comprehensive services, but a number of them restrict their services to specific conditions. When referrals were to the latter type of clinics the families usually were forced to go to several places if all the child's health needs were to be met.

The major responsibilities of the case workers in this follow-up investigation were concerned with providing opportunities whereby the families might secure the health services the children needed and reminding

them from time to time of the importance of having all defects corrected. Over the two and a half years covered by this study the main problem appeared to be that of getting the family to complete the services they had started. Approximately 3 of every 4 families that went to clinics failed to continue under care as instructed by the clinics. The fact that a number of the parents stated that they did not return to the clinics because they considered further care unnecessary clearly indicates their lack of understanding of the significance of the recommendations and of the plan of treatment. Some of the clinics to which these families failed to return have social service departments. But whether the interpretation of the care advised was the responsibility of the physician, the nurse or the medical-social workers or was shared jointly by a team of clinic workers, many of these families apparently remained unconvinced of the importance of continuing the clinic services.

From information obtained from the mothers it would thus appear that the reasons for the unmet health needs of this group of Chicago children are to be found in the cumulative effects of a series of difficult situations, together with little real appreciation on the part of the family of the value of early remedial care. Many of the difficulties encountered by these families of low income in their efforts to obtain medical and dental services are the result of conditions beyond their control.

CONCLUSIONS

The evidence from this follow-up of health examinations strikingly suggests that whether recommendations by the physician are carried out or not will be largely determined by two conditions. If parents thoroughly understand the significance of early remedial care to their children's general health and development and if the process of securing the required professional services is not too difficult, the care advised for the children will usually be obtained. The results of this study would seem to point to the importance of health education and particularly of adequate interpretation at the time a physical examination is made and continuously over the period of treatment, so that the relationship of remedial care to good health may be more generally understood. The difficulties in securing remedial care as disclosed in this investigation would also point to the need of providing facilities and procedures which would make medical and dental services accessible to those who need them.

Many communities provide for periodic examinations of children throughout their school years. Illinois now has a law which directs local authorities to provide regular health examinations for all public school pupils. Although some children will certainly benefit from these periodic contacts with the physician, unless remediable conditions discovered at these check-ups are corrected the time and effort expended on these programs will be in the main wasted. Furthermore, repeated diagnostic examinations without a follow-up of care are psychologically unsound, in that they tend to encourage a false sense of security with regard to the community's care for its children; in the minds of the children they will tend to minimize the values of good medical care.

If the children of this country are to be given the opportunity to grow into healthy adulthood, adequate facilities should be available so that corrections may be readily made when defects are discovered. The members of the medical profession share in the responsibility for achieving these ends.

Special Article**CANCER OF THE LIVER, BILE DUCTS
AND PANCREAS**ALEXANDER BRUNSCHWIG, M.D.
New York

This article is the fourth of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment. When complete, the series will be published in book form by the W. B. Saunders Company under the sponsorship of the American Medical Association and the American Cancer Society.

Primary malignant neoplasms of the liver are not particularly common; they constitute about 0.2 per cent of all necropsies and about 2 per cent of all cancers. Males are more frequently affected than females, and although the highest incidence of these cancers has been observed in the fifth and sixth decades, they are not relatively infrequent in children and young adults.

Primary malignant hepatomas may be single or multiple, presenting rounded masses or nodules. It is extremely difficult to determine whether or not in a given case one focus is the primary growth and the others are metastases or whether there are multicentric foci of origin. Histologically, there may be primary liver cell carcinomas, or carcinomas arising from the biliary ducts. Sarcomas arising from the connective tissue elements may also occur but are much less frequent than carcinomas.

The presence of cirrhosis and carcinoma is not infrequently encountered, and this has given rise to the hypothesis that cirrhosis under certain conditions may be a precancerous condition, but there is little unequivocal evidence to support this view.

Symptomatology.—Patients with primary malignant neoplasms of the liver usually exhibit a rather rapid deterioration in their general nutritional state with appreciable loss in strength and appetite; secondary anemia of a severe degree is usually observed. A sense of growing discomfort and finally of pain in the upper part of the abdomen, usually on the right side, develops. There is progressive dyspepsia, and constipation may be a prominent complaint. Icterus develops relatively late.

On physical examination the liver may be diffusely enlarged and firm but not extremely tender. The surfaces may exhibit a nodulosity in cases in which multiple tumors are present. As stated, icterus is usually not present in the earlier stages of the disease and the spleen is not often enlarged. Roentgenographic examination reveals an increase in the size of the liver shadow, and the stomach and transverse colon may be displaced by the enlarged liver. Liver function tests are not especially helpful in diagnosis because of the large factor of safety of this organ.

As the disease progresses (fig. 1) icterus may develop, and the patient becomes increasingly conscious of the enlarging liver, the aggravation of pain and the loss of strength. Ascites eventually occurs in most

cases. Bouts of fever are common in these patients, especially in the advanced stages and as an accompaniment of icterus.

In the differential diagnosis it may be impossible to distinguish primary from secondary carcinoma of the liver in the absence of a demonstrable primary growth in other intra-abdominal viscerae. The observation of palpable tumor masses associated with the liver in the absence of general signs and symptoms of deterioration suggests benign neoplasm. Occasionally a large gumma of the liver may be mistaken, clinically, for neoplasm. In the presence of positive Wassermann or Kahn reactions a therapeutic trial with antisyphilitic drugs is indicated.

Frequently the question of whether the growth is primary or secondary can be settled by aspiration biopsy of the liver.

The prognosis in untreated patients is unusually grave, and death occurs within a few months once the symptoms are well developed.

Treatment.—Because the diagnosis is seldom made early or the process is diffuse, excision of the growth is in most instances out of the question. However, this does not mean that it should never be considered; quite the contrary. Exploratory laparotomy is indicated when the patient's condition is not too precarious. It is surgically feasible to resect large portions of the right lobe of the liver bearing a tumor; the entire left lobe can be removed. Resection is particularly facile if the tumor is situated near the edge of the organ and protrudes forward or downward with a pedicle of relatively small size (fig. 2).

A review of the literature¹ reveals that successful resection of primary malignant hepatomas has been recorded sufficiently often to warrant untenable a completely defeatist attitude in this respect. Some patients have survived for years.

Radiation therapy offers little beyond possible brief periods of palliation in cases in which the tumor happens to be radiosensitive.

In Hodgkin's disease and lymphoblastoma the liver may be involved. The spleen also is usually enlarged. Irradiation of the liver and spleen might afford brief periods of regression and amelioration of symptoms, but little in the way of prolonged arrest of the disease is to be anticipated when it is at the stage of hepatic involvement.



Fig. 1.—Photograph of girl aged 17 showing advanced stage of carcinoma of the liver (malignant hepatoma). L, enlarged liver filling the upper part of the abdomen; S, spleen enlarged secondarily. There is pronounced edema of the inferior extremities. The symptoms had begun seven months previously; general deterioration was extremely rapid. Death occurred two weeks after the photograph was taken. There were no metastases in the lungs.

SECONDARY MALIGNANT TUMORS OF THE LIVER

The liver, more than any other organ, is subject to secondary invasion by malignant neoplasm arising elsewhere, especially in the abdomen. In most instances of enlarged nodular liver due to secondary involvement the site of the primary growth elsewhere is obvious on

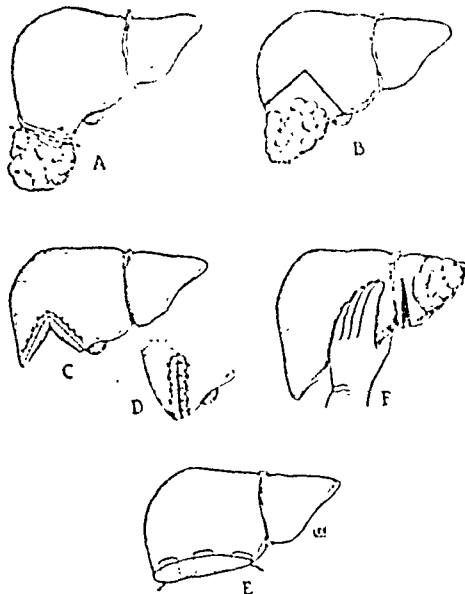


Fig. 2.—Various methods of excising hepatic neoplasms. *A*, relatively narrow pedicle of attachment is constricted by rubber tube prior to transection. *B*, V shaped excision; *C*, and *D*, repair of same; *E*, excision of entire left lobe of liver. Manual compression affords hemostasis until ligatures and sutures can be inserted; *F*, large continuous mattress sutures for compression to arrest hemorrhage. Gelatin or fibrin foam sponges may also be applied to raw surfaces for hemostasis (courtesy University of Chicago Press).

clinical examination. Often there is little clinical evidence to suggest secondary involvement of the liver, but this becomes apparent on exploratory laparotomy. When the liver is diffusely invaded by secondary growths, there is no therapeutic problem because nothing can be done. Radiation therapy is scarcely indicated in view of extensive trial in the past with generally poor results.

In recent years, with the improvements in general supportive treatment for the surgical patient and the extension of surgical practice in the treatment of cancer, the problem arises as to the advisability of resection of the primary growth in the abdomen together with the area of hepatic involvement when this appears to be sharply limited.²

The liver may be involved secondarily by intra-abdominal cancer in one of two ways: (1) by direct extension or (2) by discrete metastases. In direct extension of carcinoma of the stomach or transverse colon the neoplasm is adherent to Glisson's capsule. The latter is an effective barrier to the infiltration of malignant cells, and in most instances actual invasion of the growth through this capsule into the liver parenchyma has not occurred. When such adhesions to the liver have taken place, resection en masse of the primary growth and the hepatic extension should be carried out. The operative procedure is not difficult and offers the opportunity of prolonged survival, as illustrated in 2 patients living and well for more than five years.

In the case of multiple discrete hepatic metastases surgical excision is, of course, out of the question. However, in the presence of one or two discrete hepatic metastases I am of the opinion that excision of the primary growth and the metastases is indicated (fig. 3). It is realized that this view is at variance with the classic teaching of what constitutes an operable neoplasm; but when the abdomen is entered, if a resectable growth is discovered and one or two discrete metastases are also present, excision of the latter does not constitute an appreciable added strain on the patient and does afford the maximal of surgical effort, namely removal of all macroscopically evident neoplastic tissue. Whether or not this can be justified on the basis of increasing survival time in comfort is a question that would be extremely difficult to answer without extensive experience, which has not yet been obtained. But at least the surgeon would exert his maximal effort with little added disturbance to the patient. Evidence in favor of this view is the situation afforded by some patients in whom a solitary hepatic metastasis is observed but in whom only excision of the primary growth is carried out for palliation and who survive for periods of unanticipated length. Then there are those in whom nothing is done and who present at necropsy only one or few metastases. In these patients it is difficult not to consider that survival might have been prolonged had the metastases and primary tumor been excised. The presence of one hepatic metastasis usually indicates that others are present and may not



Fig. 3.—Photograph of surgical specimen consisting of right half of ascending colon with (*C*) carcinoma of cecum and large (*M*) bisected solitary hepatic metastasis removed at the same time from the dome of the right lobe of the liver. The convalescence was uneventful, and the patient has been free from symptoms nine months after operation and has returned to regular occupation, having gained 30 pounds (13.6 Kg.) in weight.

be detected or may still be of microscopic size; hence it might be argued that the removal of the one apparent metastasis could hardly alter the ultimate outcome. Although the strength of this argument cannot be denied, the fact remains that for some unknown reason

2. Brunswig, A., and Morton, D.: Resection of Abdominal Carcinomas Involving the Liver and Spleen Secondarily, *Ann. Surg.* 124: 746, 1946.

in some patients hepatic metastases may be solitary or few, and that therefore in order to afford these persons the benefit of surgical therapy solitary metastases should be excised when encountered, together with removal of the primary growth (provided, of course, that all macroscopic evidence of tumor is thus removed).

It is not particularly unusual at exploratory laparotomy to observe a resectable tumor and one or two small nodules in the liver. The first impression is that these are metastases and that the primary growth need not be excised or need only be short-circuited. Often such small nodules are fibrous or scirrhus angiomas or simple cysts. If the decision to remove a growth rests entirely on the nature of such hepatic observations, biopsy or excision of one of them for quick section should be carried out.

When a primary lesion in an abdominal organ is the cause of severe symptoms and is resectable, the presence of hepatic metastases should not invariably be the cause for failure to remove the growth, provided that the latter procedure is not exceedingly difficult. Appreciable palliation is often observed after the resection of such primary growths.

CANCER OF THE BILE DUCTS (AND GALLBLADDER)

Malignant neoplasms of the intrahepatic bile ducts present clinical problems inseparable from hepatic neoplasms, and these have been dealt with in the previous

TABLE 1.—Duration of Symptoms Before Operative Intervention

Patient No.	Age	Icterus	Abdominal Pain	Dyspepsia	Loss in Weight
.....	67	2 wks.	0	0	0
.....	63	3 wks.	? 3 wks.	3 wks.	0
.....	59	6 mo.	0	9 mo.	40 lb. in 9 mo.
.....	56	6 mo.	6 mo.	6 mo.	70 lb. in 8 mo.
.....	60	7 wks.	1 yr.	?	30 lb. in 3 mo.
.....	69	3 wks.	1 yr.	?	30 lb. in 10 mo.
.....	49	6 mo.	0	0	40 lb. in 6 mo.

sections. Those arising in the lowest segment of the common bile duct present problems identical with malignant tumors of the ampulla and head of the pancreas and will be dealt with in the next section. Carcinoma of the gallbladder and extrahepatic bile ducts constitutes about 4.5 per cent of all carcinomas apparent at necropsy and reported in the earlier literature; the incidence is probably less in recent years because of the extent in which cholecystectomy for cholelithiasis is now performed (W. H. Cole³).

Carcinomas of the extrahepatic biliary passages arise more frequently in the gallbladder than in the hepatic or upper common bile ducts. Invasion from one of these sites to the other apparently occurs rather rapidly via the rich lymphatic network present in these structures. Direct spread into the liver occurs more readily in cases in which the gallbladder is primarily involved, and diffuse hepatic metastases may occur relatively early, although this is by no means invariable, as some of the neoplasms apparently grow slowly. The process may be diffuse in the biliary tract walls or may be present as a circumscribed growth. In some instances the tumors are papillomatous.

Histologically the neoplasms are most frequently adenocarcinomas, but scirrhus carcinomas also occur. Indeed the latter, being composed of short strands or

cords of cells infiltrating a dense proliferation of fibrous tissue, are sometimes not readily detected, the whole process being regarded at first glance as inflammatory. In relatively infrequent instances the neoplasm will be of the squamous cell type.

Carcinoma of the extrahepatic biliary tract is a disease of late middle or advanced age.⁴ Much speculation has arisen in connection with the possible etiologic role of gallstones. In small laboratory animals the implantation of gallstones has been followed eventually in some instances by the development of carcinoma. Rolleston and McNee have pointed out that 4 to 14 per cent of all cases of cholelithiasis are associated with carcinoma. Evarts Graham and associates at the Barnes Hospital in St. Louis observed that 8.5 per cent of all proved cases of cholelithiasis were associated with carcinoma of the biliary tract. Fawcett and Rippman found carcinoma of the gallbladder in 12.3 per cent of 592 cases of gallstones encountered at necropsy.³ These observations lend some support to the view that temporizing with patients in early middle age who have symptoms due to cholelithiasis entails a failure to afford preventive measures in regard to cancer of the biliary tract (by cholecystectomy). I observed a patient aged 61 who had had one severe attack of biliary colic. Because of his age and the fact that he had experienced only one severe attack, he was not operated on. A year later he was brought back to the hospital with severe icterus and operated on as an emergency treatment. Cholecystectomy and choledochostomy were performed, but he succumbed on the fourth day (hepatorenal syndrome). Study of the specimen revealed in addition to acute cholecystitis and cholelithiasis a carcinoma in the fundus of the gallbladder about 2 cm. in diameter. Necropsy revealed no metastases.

Symptomatology.—The onset of symptoms is usually insidious. In a study of this question I found that in 7 patients with extrahepatic carcinoma of the biliary tract the most constant and striking sign was loss in weight accompanied by loss of appetite. Dyspeptic symptoms are at first vague and pain in the upper part of the abdomen is not a striking feature in the earlier stages. Icterus in most instances is a late sign, since at exploratory operation the disease of the icteric patient was invariably in the far advanced stages. Exceptions to this rule are those instances in which the growths are papillary and produce some degree of obstruction or in which they develop as circumscribed stenotic lesions in some portion of the hepatic or common ducts. The signs and symptoms as they were noted in the 7 patients with advanced carcinoma of the extrahepatic bile tract are given in table 1. Attention is called to the first 2 patients, who were practically asymptomatic until just prior to operative intervention, at which time the disease was found in an advanced stage.

Treatment.—Since the great majority of patients with carcinoma of the extrahepatic biliary tract undergo laparotomy late in the course of the disease, there is usually little that can be done. If the entire extrahepatic biliary tract is involved, this can be excised in attempted palliation. In a series of 7 such cases this operation was carried out, choleangiocholecystocholedochectomy, with appreciable palliation in 1 case; the patient, a man aged 68, was relieved of symptoms and returned to normal

3. Cole, W. H., in Christopher, F.: *Textbook of Surgery*, ed. 4, Philadelphia, W. B. Saunders Company, 1945.

4. Stewart, H. L.; Lieber, M., and Morgan, D. R.: Carcinoma of the Extrahepatic Bile Ducts, *Arch. Surg.* 41:662 (Sept.) 1940.

activity for a year. Briefer periods of palliation obtained in some of the other patients.⁵

In cases in which obstructive symptoms are produced by localized growths segmental resection of the involved structure with end to end anastomosis over a T tube or with choledochoduodenostomy has afforded in some instances prolonged survival even to several years.

Irradiation has little to offer in the treatment of these neoplasms.

Prognosis.—In cancer of the bile ducts (and gallbladder) the prognosis is almost uniformly bad, and the survival time varies from four to eight months after symptoms have become well established.

MALIGNANT TUMORS OF THE PANCREAS AND PAPILLA OF VATER

Carcinoma of the papilla of Vater arises from the duodenal mucosa over the surface of this structure, from the duodenal mucosa in its immediate vicinity or from the lining of the ampulla of Vater.⁶ The growths may be papillomatous or may produce ulcerations with raised borders. Nothing is known concerning the cause. The condition is observed in middle and advanced age with preponderance in the male sex; a few instances in young persons have been observed.

Symptomatology.—The onset of symptoms is usually exceedingly insidious, and the first symptom or sign may vary in different patients. There may be vague dyspeptic symptoms; there may be some epigastric discomfort; there may be an apparent unaccountable loss in weight and feeling of loss of strength; any or all these complaints may be present, to be followed by icterus which is at first mild and variable in severity but later becomes continuous and progressive. By the time icterus is well defined there will have been an appreciable loss in weight. The appearance of painless jaundice does not obtain invariably in all patients as the first apparent disturbance. In some instances moderate to severe melena may be an early sign, and this may be unaccompanied by abdominal complaints or even icterus.

With icterus the stools become light (clay-colored stools) and there may be steatorrhea.

On physical examination in addition to icterus, which is often quite severe, and the usual signs of recent loss in weight, palpation of the abdomen may reveal a rounded distended and tense gallbladder. This observation in the presence of icterus is known as Courvoisier's sign. The other frequent possible cause of obstructive icterus is an impacted calculus in the lower common duct. Since calculus formation is often the result of cholecystitis, the walls of the gallbladder being inflamed and rigid do not permit of its distention by obstructed bile. Obviously, therefore, Courvoisier's sign cannot be infallible as a diagnostic indication for neoplastic obstruction of the lower common duct, since cholecystitis with lithiasis may be present at the same time as carcinoma of the papilla of Vater. Furthermore, the patient's abdomen may be too thick or the liver too large to permit of palpation of a distended gallbladder. When present, Courvoisier's sign is of considerable importance; when absent, the presence of carcinoma is not ruled out. Because of their relatively small size carcinomas of the papilla of Vater are seldom palpable.

Laboratory studies usually reveal a secondary anemia. The degree and quality of icterus is determined by the icteric index and/or Vandenberg reactions. Blood amylase and lipase studies afford little unequivocal evidence for diagnostic purposes.

Repeated examination of the stools for occult blood when the patient is on a meat-free diet are of significance, because in the presence of obstructive icterus constant occult blood in the stools strongly suggests carcinoma of the papillary region of the duodenum, the latter being the source of the bleeding. I have observed near fatal hemorrhage from small (1 to 2 cm.) ampullar carcinomas.

Roentgenographic studies of the duodenum may be entirely negative due to the small size of the lesion and the difficulties of examining this portion of the alimentary tract. On the other hand, larger growths can be visualized as papillomatous or ulcerating lesions (fig. 4). The so-called reversed 3 (8) sign of Forstberg, indicates pronounced tense edema of the papilla of Vater which usually, but not always, is due to carcinoma.



Fig. 4.—Roentgenogram of barium fluoroscopy showing S, stomach; D, first portion of duodenum, and T, large filling defect due to neoplasm (carcinoma of papillary region). The patient was alive and well more than eight years after transduodenal resection of the neoplasm with reimplantation of the common bile and pancreatic ducts (courtesy of Radiology).

The differentiation from carcinoma of the extrahepatic biliary ducts is difficult if not impossible. The differentiation from carcinoma of the head of the pancreas is primarily of academic interest, since the treatment is the same, as will be shown later.

Prognosis.—The rapidity of growth, spread and metastasis vary widely in different patients. An average duration of seven months has been reported by some authors after the development of icterus. However, in some patients in whom short circuiting operations have been performed to relieve icterus, there has been survival for two to five years or more. Prior to the advent of vitamin K, death not infrequently occurred from cholemic hemorrhage and necropsy revealed that the growth was still localized to the papillary region.

PANCREAS

Malignant tumors of the pancreas are most frequently observed in patients of middle and advanced age. Nothing, of course, is known of their causation.

The most frequent type of malignant pancreatic neoplasm is duct cell carcinoma, of which there are several

5. Brunschwig, A., and Bigelow, R. R.: Advanced Carcinoma of the Extrahepatic Bile Ducts: Choleangiocholecystocholedochectomy, *Ann. Surg.* 122: 522, 1945.

6. Lieber, M.; Stewart, H., and Lund, H.: Carcinoma of the Papillary Portion of the Duodenum, *Ann. Surg.* 109: 219, 1939.

varieties, depending on the anaplasia of the cells and the manner in which tubular structures are formed. Usually there is sufficient proliferation of the fibrous tissue to afford a dense firm consistency to the mass, i. e., scirrhous carcinoma. Carcinomatous degeneration of acinar tissue forming true medullary carcinoma is indeed rare if it ever occurs at all. Also infrequent is squamous cell metaplasia in some portions of a typical duct cell carcinoma. Fibrosarcoma and lymphosarcoma primary in the pancreas are also rare.

Cystadenomas of the pancreas are multilocular tumors, usually quite bulky when discovered at operation. The locules contain serous or viscous fluid that is colorless or dark brown, clear or cloudy. These tumors are for the most part benign but in some instances exhibit local spread beyond the pancreas and metastasize.⁷

Pancreatic cysts are benign lesions but on rare occasions are associated with carcinoma.⁸ Such instances probably represent pancreatic cyst formation concomitant with carcinoma or secondary to disturbances in the pancreas due to the extension of the carcinoma rather than malignant degeneration of a preexisting true cyst.

Symptomatology.—The symptomatologic manifestation of pancreatic cancer may be considered in two parts; i. e., that associated with cancer of the head of

Laboratory studies are not particularly characteristic; they reveal secondary anemia and an obstructive type of icterus, usually severe. The stools are acholic in proportion to the severity of the icterus. Aspiration of duodenal contents for study of the ferments present in order to secure evidence of occlusion of pancreatic juice are not generally carried out.

Prognosis.—In untreated patients the natural course of the disease lasts several months before death ensues from pneumonia, cholemic hemorrhage or general exhaustion (cholemia).

CARCINOMA OF THE BODY OF THE PANCREAS

Carcinoma of the body of the pancreas is less frequent than carcinoma in the head of the pancreas. Statistical studies show that 10 to 25 per cent of carcinomas of this organ arise in the body or tail. Males are three to four times more frequently affected than females, the age incidence being highest in the fifth and sixth decades of life.

Symptomatology.—Because the body and tail of the pancreas are anatomically somewhat removed from the alimentary or biliary tracts, obstructive symptoms of one or the other type do not occur, at least until the final stages of the disease.

The early symptoms are vague indeed and usually are those of dyspepsia, especially eructations, loss of appetite and constipation; there is progressive weakness and loss of weight and strength. Pain is the outstanding and characteristic symptom. This is present in the epigastrium, especially in the left upper quadrant, and has a decidedly characteristic pattern of radiation, namely to the hypochondriac regions and through to the back. A complete high girdle distribution is also common and characteristic. The pain of the patient is more or less constant; it is often aggravated by lying down and relieved partially by the sitting position.

Physical examination usually reveals a state of nutritional deterioration. On palpation of the abdomen there may be tenderness over the region of the body of the pancreas. A deep seated resistance may be elicited, or a definite deeply situated mass with indefinite outlines may be palpable. Icterus may occur late in the course of the disease and is due to extension of the growth from the body of the gland into the head.

Röntgenographic studies are usually negative, but some workers by persistent interest in the problem have reported successful demonstrations of bulging of the tumor mass into the stomach. Likewise gastroscopic examination, usually negative, has on some occasions revealed mucosal changes due to secondary involvement of the stomach by the primary growth in the pancreas.

Laboratory studies do not afford information of special significance, other than the observation expected in a patient who presents considerable nutritional deterioration.

TREATMENT OF CANCER OF THE PANCREAS

A discussion of the treatment of pancreatic cancer will be prefaced by certain remarks to the general practitioner who, because of the vagueness of the symptoms and signs, is so often consulted by patients in the early stages of this condition.

It is imperative that these tumors be diagnosed in the early stages because, unlike the situation fifteen years or more in the past, surgical attack on them has

TABLE 2.—Some Collected Results of Pancreatoduodenectomy for Carcinoma of the Pancreas or Ampulla of Vater

Author	Number of Cases	Postoperative Mortality
Whipple, A. O.: collected series to April 1942	Two stage 41 One stage 23	12 (29%) 8 (35%)
Orr, T. G.: collected series, April 1942 to November 1944	Two stage 15 One stage 19	4 (26%) 6 (32%)

the pancreas and that associated with cancer of the body and tail.

In the head of the pancreas the onset may be insidious with the development of painless jaundice. On the other hand, the development of icterus may often be preceded by dyspeptic symptoms which may become quite pronounced. Epigastric pain is frequently present and is generally localized to the region of the head of the pancreas with radiation through to the back. This pain is often constant and sometimes aggravated by the patient's lying down and relieved by his sitting up. Nausea is a frequent complaint. There is loss of weight and strength. Constipation is a frequent complaint and often becomes extremely pronounced.

On physical examination icterus is the most apparent sign, together with the general observation of pronounced loss in weight. Palpation of the abdomen may reveal a distended gallbladder (Courvoisier's sign, discussed previously). Not infrequently a mass is palpated in the region of the head of the pancreas. This is deeply situated and possibly tender; its outlines are indefinite, and it does not descend with inspiration. Failure to palpate a mass does not rule out the presence of carcinoma of the head of the pancreas, nor do negative roentgenographic studies. Positive roentgen observations include a widened duodenal curvature, evidence of rigidity of the inferior wall of the pylorus or actual lesions involving the concave border of the duodenum.

7. Kennard, H.: Papillary Cystadenocarcinomas of the Pancreas, *Surgery* 9: 65, 1941.

8. McWhorter, G. L.: Cysts of the Pancreas, *Arch. Surg.* 11: 619, 1925.

been made possible.⁹ To be sure, the results achieved to date are not extremely brilliant as far as numbers of patients salvaged for prolonged periods are concerned (table 2), but the majority of patients operated on have been in the advanced stages of the disease and prolonged survival was not to be anticipated. The same situation existed in regard to gastric cancer. It required several decades for gastrectomy to become established and carried out on a wide scale. Indeed, shortly after its introduction not a few of the outstanding figures in medicine of the day decried its performance as too radical and predicted a limited usefulness. The early results of excision of tumors of the central nervous system and lung taxed the perseverance of the pioneers in these fields, but finally the problems of technic, morbidity and mortality were surmounted. Therefore, while the situation not many years ago was that an early diagnosis afforded no practical advantages since nothing could be done about the situation anyway, today these neoplasms can be resected with return of the patient to normal life (figs. 5, 6 and 7).



Fig. 5.—Photograph of surgical specimen secured by one stage pancreatoduodenectomy showing S, lower part of the stomach; D, duodenum; P, head of pancreas; C, opened common bile duct, and T, small carcinoma in head of pancreas just beneath ampullary region. The patient is living and well over three and a half years after operative intervention.

Furthermore, because of the vagueness of the clinical picture which often obtains in the early stages of pancreatic cancer, persistence of these symptoms, failure to obtain relief by the usual therapeutic management and above all an unaccountable loss in weight indicate the advisability of exploratory laparotomy to rule out the presence of cancer. This problem, of course, requires the best of clinical judgment and acumen. When all the signs and symptoms of pancreatic cancer are present and there is little doubt as to the situation, the disease has usually progressed to an advanced stage in which little more than palliation is possible.

Operations for Resection of Carcinoma of the Papilla of Vater.—(a) In transduodenal resection (fig. 8) the duodenum is incised longitudinally on the anterior aspect of the lower portion of the second segment. The lesion involving the papilla is resected by elliptic incisions encompassing it and extending through the duodenal wall. The transected common bile and pancreatic ducts are sutured into the wound and the latter completely closed.

9. (a) Whipple, A. O.; Parsons, W., and Mullins, C.: Treatment of Carcinoma of Ampulla of Vater, *Ann. Surg.* 102:763, 1935. (b) Brunschwig, A.: *The Surgery of Pancreatic Tumors*, St. Louis, C. V. Mosby Company, 1942.

Transduodenal resection is carried out in well localized lesions, papillomatous in character, which are obviously superficial and confined to the duodenal mucosa or ampulla. Some patients have survived for

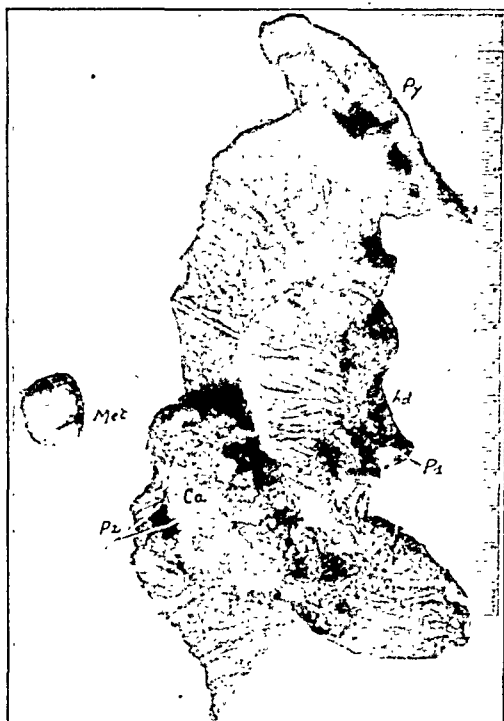


Fig. 6.—Surgical specimen secured by one stage pancreatoduodenectomy: Py, pylorus; Hd, head of pancreas; P1, metal probe in accessory pancreatic duct; P2, metal probes in main pancreatic and lower common bile ducts, respectively, protruding through Ca, large papillary carcinoma of papilla of Vater; Met., metastatic node removed from above the cystic duct. The operation was performed in May 1943.

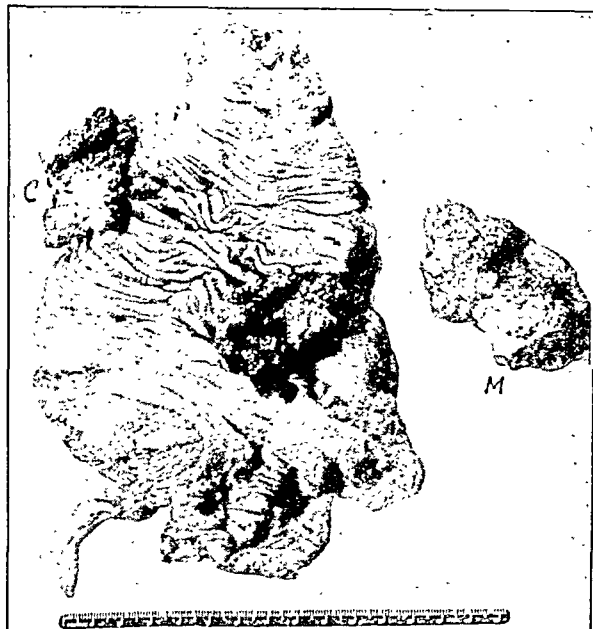


Fig. 7.—Photograph of surgical specimen obtained by right hemicolectomy (C, carcinoma of ascending colon and M, mesenteric lymph node metastases) from same patient from whom specimen shown in fig. 11 was removed. The operation was performed in January 1946.

years after such types of excision in cases in which the histologic diagnosis was carcinoma. (b) Radical resection.

Operation for Resection of the Head of the Pancreas.—In pancreatoduodenectomy (radical excision of carcinoma of the papilla of Vater (fig. 9) the head of the pancreas and the duodenum are removed in toto. The peritoneum along the convex margin of duodenum is

fat is not sufficient to maintain adequate nutrition, pancreatin is given by mouth with meals. No other substitution therapy is apparently necessary.

In the presence of inoperable growths relief from icterus may be attempted by cholecystogastrostomy or cholecystojejunostomy.

Operation for Resection of Body and Tail of Pancreas¹⁰ (fig. 11).—The transverse mesocolon is divided with retraction upward of the stomach and downward of the transverse colon. This exposes the body and tail of the pancreas. The spleen is freed from gastric, colic and diaphragmatic attachments by the division of vessels and ligaments. It is then grasped by the right hand and elevated, the body and tail of the pancreas being brought upward with it. The pancreas may then be divided at a level of election to permit of excision of a tumor arising in it. The site of excision is drained and the transverse mesocolon reconstituted.

Total pancreatectomy has been performed successfully on a number of occasions.¹¹ Apparently insulin and a full diet are all that are necessary to maintain normal nutrition. The interesting result of metabolic studies in these patients is that the degree of diabetes is relatively mild,

the patients requiring only 20 to 30 units of insulin a day. In 1 patient who had severe diabetes and carcinoma of the body of the pancreas, total pancreatectomy was performed and the degree of diabetes was not enhanced following the operation. Indeed, it may have been decreased.¹²

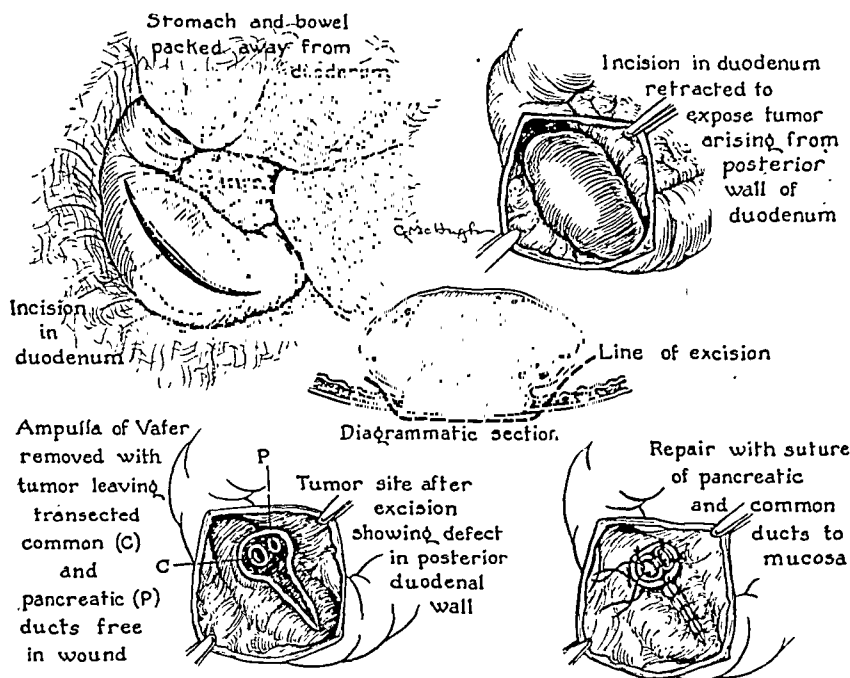


Fig. 8.—Diagram of transduodenal resection of carcinoma of the papilla of Vater.

incised to permit elevation of the head of the pancreas and duodenum. The ligament of Treitz is transected. The lower portion of the stomach is transected and the upper segment closed. The neck of the pancreas is divided over the superior mesenteric vessels. The common duct is divided at the level of the superior border of the first segment of duodenum. The jejunum is transected a few centimeters distal to the ligament of Treitz. The lower part of the stomach, head of the pancreas and the duodenum are removed. A gastrojejunostomy is performed (Billroth II). The next long loop of jejunum is brought upward for choledochojejunostomy. An enteroenterostomy is done between afferent and efferent loops to the latter anastomosis. The neck of the pancreas is ligated by several interlocking mattress sutures; a separate ligature is placed about the transected duct of Wirsung. Drains are placed to the transected pancreas and to the previous site of duodenum and head of pancreas.

Other methods of reconstituting the upper portion of the alimentary tract have been described and successfully carried out (fig. 10). Among these is the reimplantation of the transected neck of pancreas into the jejunum in an attempt to return external pancreatic secretion to the bowel. However, patients may do comparatively well with occluded external pancreatic secretion. The stools may be practically normal; more often fat absorption is not normal and they are bulky, light in color and foul. When the absorption of

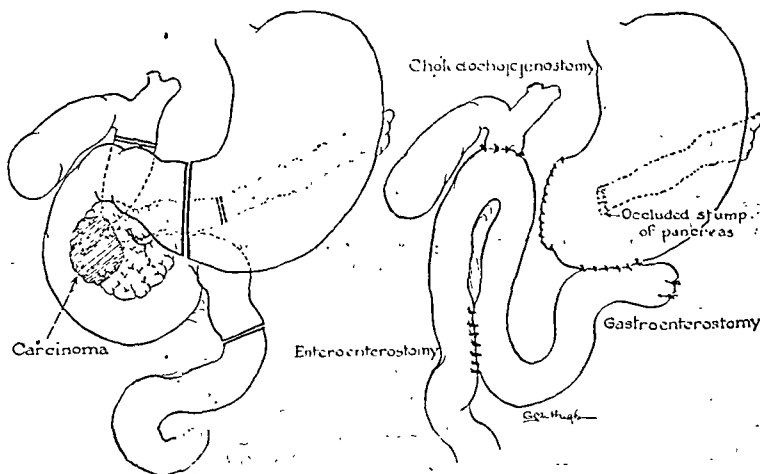


Fig. 9.—Diagram showing operation for radical excision of head of pancreas, lower part of stomach, entire duodenum, first few centimeters of jejunum for carcinoma of papilla of Vater and/or carcinoma of head of pancreas (Brunschwig's technic) (courtesy Surgery, Gynecology and Obstetrics).

INSULIN-PRODUCING ISLET CELL TUMOR OF THE PANCREAS

Most insulin-producing islet cell tumors of the pancreas are benign, but a number of malignant ones

10. Brunschwig, A.: The Surgical Treatment of Carcinoma of the Body of the Pancreas, *Ann. Surg.* 120: 406, 1944.

have been observed.¹³ I know of no instance of islet cell adenoma which at operation was excised and in which there were subsequent developments of metastases. Those that were malignant presented metastases at the time of operation.

The diagnosis is made by observing the following features (triad of A. O. Whipple): (1) Attacks of weakness, dizziness, flushing, amnesia or actual coma coming on after periods of starvation or of muscular exertion; (2) relief obtained by ingestion of food and/or injection of dextrose, and (3) blood sugar levels of 50 mg. or less per hundred cubic centimeter during the attack.¹⁴

The foregoing features are also characteristic of insulin-producing benign islet cell tumors and call for exploratory laparotomy. The solitary or multiple benign islet adenomas of the pancreas are excised locally. In the case of malignant tumors, the primary growth is excised and, if feasible, the metastases also.



Fig. 10.—Diagrams of procedures devised by (A) Whipple and by (B) Cattel for reimplantation of transected neck of pancreas into jejunum following pancreaticoduodenectomy. Cholecystojejunostomy is performed rather than cholecystojejunostomy.

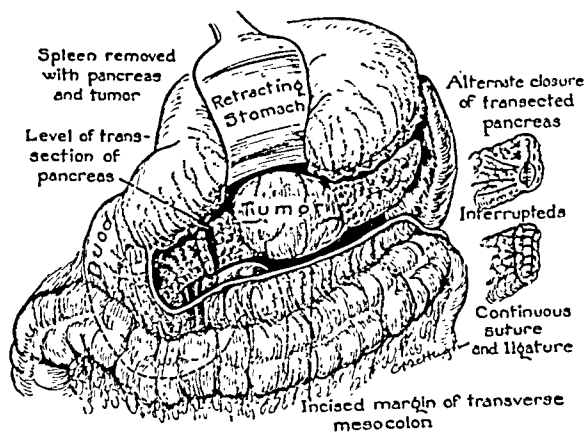


Fig. 11.—Diagrammatic representation of method for resection of body and tail of pancreas for neoplasm (courtesy C. V. Mosby Company).

Hypoglycemia of the order of 60 to 70 mg. per hundred cubic centimeters of dextrose in the blood is probably not on the basis of insulin-producing islet cell tumor and can be managed by proper dietary regimens. In a few instances hypoglycemia of the order previously described for islet cell tumor led to exploratory operation with failure to discover a tumor. Radical pancreatectomy (body and tail resected) afforded relief

11. Whipple, A. O.: Radical Surgery for Certain Cases of Pancreatic Fibrosis Associated with Calcareous Deposits, *Ann. Surg.* **124**: 991, 1946.

12. Brunschwig, A.; Ricketts, H. T., and Bigelow, R. R.: Total Pancreatectomy, Total Gastrectomy, Total Duodenectomy, Splenectomy, Left Adrenalectomy and Omentectomy in a Diabetic Patient: Recovery, *Surg., Gynec. & Obst.* **80**: 252, 1945.

13. Whipple, A. O., and Frantz, V. K.: Adenoma of the Islet Cells with Hyperinsulinism, *Ann. Surg.* **101**: 1299, 1935.

14. Whipple, A. O.: More Recent Developments in Surgical Therapy of Islet Cell Tumors, *Proc. Inst. Med. Chicago* **13**: 63, 1940.

from an attack of hyperinsulinism. Persistence of such attacks after the removal of the body and tail of pancreas strongly suggests the presence of an undetected islet cell adenoma in the head of the pancreas.

Clinical Notes, Suggestions and New Instruments

TEST FOR LOCATING THE POSITION OF THE TIP OF THE MILLER-ABBOTT TUBE

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The principle of intestinal intubation by means of the double lumen suction tube or latterly by the newer single lumen mercury-weighted tubes is one of the great advances of modern therapeutics. Originally developed by Miller and Abbott¹ for investigative purposes, the clinical possibilities of the double lumen tube were soon appreciated and realized.² In intestinal obstruction, it has served as a primary therapeutic measure in selected cases and as an adjuvant measure to surgical treatment in many others. It plays an increasingly useful role when introduced preoperatively, when elective intestinal resection is anticipated.

Two problems are likely to be encountered during the introduction of the tube. The first problem relates to the difficulty of having the tube traverse the pylorus and enter the duodenum. It is a matter of common observation that the more urgent the need for the tube, the more difficult it is to accomplish this feat. A variety of tricks and maneuvers have been described to facilitate the passage of the tip and the balloon through the pylorus. Probably the most widely used of these is the introduction of metallic mercury into the balloon as described by Harris.³ This method is now employed routinely.

The second problem, and the one with which this report is primarily concerned, is the determination of whether the end of the tube has actually passed into the intestine, or whether, with its further introduction, the tube is merely becoming coiled up in the stomach. It is imperative that this fact be established, if one is desirous of having anything more than gastric suction. Furthermore, with the tube advancing as planned into the small intestine, it is well to know in what part of the abdomen the suction tip lies. This information may at times assist in the placing of an incision.

Several methods are available for determining the position of the indwelling tube. Fluoroscopic or roentgenographic examination can give more accurate information than any other available means. With some experience, one can tell whether the tip is in position to pass or has passed the pylorus. If it has passed, one estimates the amount of small intestine which has been intubated. Other methods depend on the character of the drainage being recovered, the time required for fluid taken by mouth to be aspirated, the demonstration of rhythmic peristalsis in a syringe attached to the balloon connection and the downward traction on the tube produced by peristaltic activity in the intestine.

The test about to be described is simple yet effective. It involves abdominal auscultation carried out simultaneously with the production of a noise within the balloon or at the suction openings in the tube. The only requirements are an observer and an assistant, a stethoscope and a syringe.

THE TEST

A Luer syringe of at least 20 cc. capacity is filled with 15 or 20 cc. of air and attached by the assistant to the tubing leading to the balloon of the Miller-Abbott tube. The assistant steadily

From the Surgical Service of the Union Memorial Hospital.

1. Miller, T. G., and Abbott, W. O.: Intestinal Intubation: A Practical Technique, *Ann. J. M. Sc.* **187**: 595-599 (May) 1934.

2. Abbott, W. O.: Indications for the Use of the Miller-Abbott Tube, *New England J. Med.* **225**: 641-646 (Oct. 23) 1941.

3. Harris, F. I.: New Rapid Method of Intubation with Miller-Abbott Tube, *J. A. M. A.* **125**: 784-785 (July 15) 1944.

introduces and withdraws the plunger alternately so as to inflate and deflate the balloon. This serves to create within the abdomen a noise, actually a "racket" to the observer listening with his stethoscope. The amount of air introduced with each movement of the plunger and the speed of the movements are variable; the effort being made to produce a continuous sound for the observer. He moves his stethoscope about the abdomen, selecting the area or point of maximum intensity of the sound. If the tip has passed on into the intestine, experience shows he will find a definite point beneath which the sound of air rushing in and out of the balloon seems almost to be in his ears. If, on the other hand, the balloon remains in the stomach, the sound will not be as sharply localized, but will be audible across the epigastrium, especially to the left and in general over the area where the stomach is known to be situated. In addition, the sound takes on a somewhat resonant quality, dependent apparently on its presence in a larger viscus. Because of this diffuse character and resonant quality, one does not undertake to determine in what part of the stomach the tip lies.

Satisfactory sounds, though less clearly audible, can be produced by utilizing the suction tube itself instead of the balloon. This means that the test is also applicable to the newer single lumen tubes with mercury bulb attached designed by Harris⁴ and Cantor.⁵ Less accurate localization is possible because of the multiple openings in these tubes for suction; but one can in most instances readily and promptly confirm or disprove the impression that the tube has passed well into the intestine.

This test has been employed for more than two years on many patients, and the observations have been repeatedly checked by roentgen examinations and by other means. The speed and

involves the expense of the roentgenograms to the patient or the hospital, an expense which may be multiplied many times if repeated roentgenograms are required.

SUMMARY

A test is described for ascertaining the location of the advancing suction tip of the Miller-Abbott tube and especially for determining whether the tube has left the stomach and entered the intestine. The test depends on stethoscope auscultation of the abdomen by the observer, while an assistant alternately inflates and deflates the balloon with air. The observer determines the point of maximum intensity of the sound and this indicates the position of the tip. If the tube is still entirely within the stomach, the sounds take on certain special characteristics. The test is applicable, though with less accuracy, to the single lumen tubes, the air being passed in and out of the suction tube itself. The great advantage of this method lies in reducing the necessity for roentgenographic examination with its consequent expenditure of effort by all concerned, its consumption of time and its cost.

108 East Thirty-Third Street.

Council on Pharmacy and Chemistry

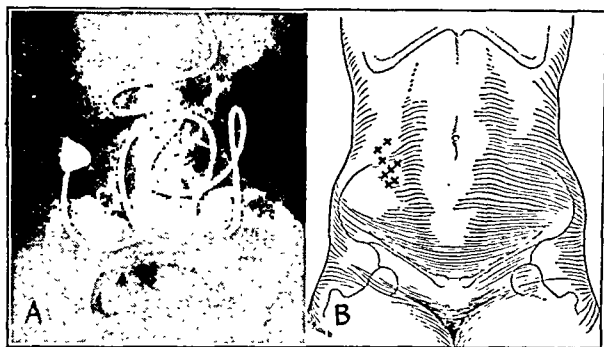
REPORT TO THE COUNCIL.

ORGANOMERCURIAL COMPOUNDS

The Council on Pharmacy and Chemistry presents the following report by Drs. Morton and North and Mr. Engley as a further challenge to the scope of usefulness of mercurial antiseptics. The potency of mercury, as either an inorganic or an organic compound, to inhibit growth in bacterial cultures is so striking that it created the presumption of high disinfectant potency. This presumption was severely shaken when it was proved that the inhibited bacteria are not killed by the mercurials but resume lusty growth when the adherent mercury is sufficiently diluted or when it is removed chemically by sulfur compounds. Nevertheless, the use of mercurial antiseptics has continued, especially in the form of organic compounds of low systemic or local toxicity. This could be defended in a degree on the basis that bacteriostasis would at least tend to decrease the number of bacteria and thus the chance of infection. Whether this actually applies to the special conditions of the clinical use of these mercurials should be the subject of carefully controlled experimentation and not of *a priori* arguments. So far the proof does not fully satisfy the standards of scientific criticism.

It could also be argued, or hoped, that the mercury inhibition of growth would impair the infectivity of the bacteria, perhaps irreversibly. This too should be the subject not of argumentation but of experimental verification. This is the chief purpose of the present report, and the answer under the conditions of the experiment reported is in the negative: Bacterial cultures which have been exposed for ten or even fifteen minutes to the full commercial concentration of three of the most widely used organic mercurial agents produce fatal bacteremia when injected intraperitoneally into mice. The tests were made with a non-spore-forming organism, a virulent hemolytic streptococcus "pathogenic for man and mouse," and the results are decisive. Whether other infectious agents would differ and lose their virulence when exposed to mercury may well be investigated. Actually, in other experiments in the same laboratory it has been found that the infection of laboratory animals by influenza virus may be prevented by their exposure to "mercurochrome," "merodicein," "metaphen" and phenyl mercuric nitrate; "merthiolate" was ineffective. Others have reported the effectiveness of "mercurochrome" in inactivating *in vitro* the virus of poliomyelitis. The field of usefulness of organic mercurials should be explored, proved and defined. The proponents of these preparations should proceed seriously and diligently to this task. The Council wishes to give the necessary opportunity to meet the challenge, but it should not be deferred indefinitely. It is a field in which wishful thinking is dangerous.

AUSTIN SMITH, M.D., Secretary.



A. roentgenogram of patient with partial intestinal obstruction, showing Miller-Abbott tube with mercury-weighted balloon lying in the small intestine. B. eight independent observers have each recorded the point of maximum intensity of the sound as determined by stethoscope auscultation, according to the technic described.

accuracy of one's observations improve with practice. In occasional instances, the findings may be equivocal or unsatisfactory and the characteristic sounds are not heard. These instances are usually attributable to technical complications, such as kinking of the tube, so that the air does not readily pass, and rupture of the balloon, making it impossible to inflate and deflate it.

The figure illustrates a recent evaluation of this test whereby eight physicians, most of whom had never tried the test, were asked independently to observe and record the point of maximum intensity of the sound. The results are shown on the chart along with the roentgenogram of the same patient, taken a short time previously.

The great value of this test lies in its simplicity and applicability. Most observers must depend solely on abdominal roentgenograms to ascertain the position of the tube. Such an examination involves either moving the patient to the x-ray machine or the machine to the patient; it involves a lapse in time until the picture can be secured and viewed, and, finally, it

4. Harris, F. I.: Intestinal Intubation in Bowel Obstruction: Technique with a New Single Lumen Mercury Weighted Tube, Surg., Gynec. & Obst. 81: 671-678 (Dec.) 1945.

5. Cantor, M. O.: New Simplified Intestinal Decompression Tube, Am. J. Surg. 72: 137-142 (July) 1946.

THE BACTERIOSTATIC AND BACTERICIDAL ACTIONS OF SOME MERCURIAL COMPOUNDS ON HEMOLYTIC STREPTOCOCCI

In Vivo and in Vitro Studies

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Mercurial compounds have been employed as disinfectants since the beginning of bacteriology. Indeed, for a long period mercurial compounds, such as bichloride of mercury, headed the list of chemicals which were thought to be effective in the killing of micro-organisms. This perhaps may be attributed to the favorable publicity which Koch¹ in 1881 gave to bichloride of mercury during his work with the organism causing anthrax. In substance he stated that, without special preparation of the objects to be disinfected, bichloride kills by a single application of a very dilute solution, and in a few minutes even the most resistant forms of the organisms are killed.

Geppert² in 1889 first pointed out that false inferences were drawn that bacteria were killed by the action of bichloride of mercury when growth of the organisms was prevented by traces of the chemical in the culture medium. In support of his thesis Geppert claimed that the spores of *Bacillus anthracis* were capable of infecting animals even after the spores had been treated with bichloride of mercury and produced no growth on subculturing by the usual methods. To eliminate the bacteriostatic action of the small quantity of mercury adherent to the bacteria and of the small amount of the chemical carried into the subculturing medium in the inoculum, Geppert employed ammonium sulfide to inactivate the bichloride of mercury. By this technic Geppert showed that the spores of *B. anthracis* were not killed by 1:1,000 bichloride of mercury during a period of exposure of hours, in one case as long as twenty-four hours.

In 1891 Abbott³ claimed that he had confirmed Geppert's work in part, but he did not do animal experiments. In his publication in 1891, Abbott concluded, ". . . it is plain that for use in surgical practice the solutions of corrosive sublimate do not possess all of the advantages hitherto attributed to them."

Do other compounds of mercury possess the same shortcomings as disinfectants⁴ as does bichloride of mercury? Are non-spore forming pathogenic micro-organisms still infectious while in a state of bacteriostasis brought about by a mercurial compound? The answers to these important questions are provided by the experimental work to be described.

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These studies have been aided by a grant from the Council on Pharmacy and Chemistry, American Medical Association.

Dr. Morton was a member of the Committee on Antiseptics and Disinfectants, American Public Health Association, 1943.

The present address of Dr. North is Philadelphia General Hospital, Philadelphia.

The present address of Mr. Englely is Camp Detrick, Frederick, Md.
1. Koch, R.: Ueber Desinfection, Mitt. a. d. k. Gesundheitsamte 1: 234-282, 1881.

2. Geppert, J.: Zur Lehre von den Antiseptics: Eine Experimental-untersuchung, Berl. klin. Wchnsch. 26: 789-794, 819-821, 1889.

3. Abbott, A. C.: Corrosive Sublimate as a Disinfectant Against *Staphylococcus Pyogenes Aureus*, Bull. Johns Hopkins Hosp. 2: 50-60, 1891.

4. Agents capable of destroying pathogenic micro-organisms and thus preventing infection.

REASONS FOR AND MEANS OF PREVENTING THE BACTERIOSTATIC ACTION OF MERCURIAL COMPOUNDS IN GERMICIDAL TESTS

It is generally known that it is exceedingly difficult to destroy bacterial spores. Our results, about to be described, indicate that virulent hemolytic streptococci (an example of non-spore forming organisms) are still infectious after being exposed for ten minutes to any one of three organic mercurial compounds obtained in the open market. The compounds studied were (1) the disodium salt of 2,7-dibrom-4-hydroxymercurifluorescein, merbromin, N. F., "mercurochrome," (2) sodium ethylmercurithiosalicylate, "merthiolate," (3) the anhydride of 4-nitro-3 hydroxymercuri-orthocresol, "metaphen." The fact that both vegetative cells and spores are still infectious while in a state of bacteriostasis is sufficient reason for taking precautions to eliminate the bacteriostatic effect of mercury when testing mercurial compounds in vitro for germicidal activity. In the in vitro test, micro-organisms are mixed with the chemical under test and at stated intervals portions, usually a standard loopful, are transferred to an appropriate subculturing medium. It is quite generally accepted that germicides in solution bring about their action by reacting chemically with the bacterial cell. When a portion of the germicide-culture mixture is transferred into the subculturing medium, in order to determine whether the organisms are still viable some of the germicide is introduced into the subculturing medium, both free in the solution and in combination with the bacterial cells. In testing strong solutions of germicides it was realized that in some cases it was possible to carry enough of the chemical in an inoculum the size of a standard loopful into the subculturing medium to give a concentration of the germicide in the subculturing medium great enough to exert a bacteriostatic action. Shippen⁵ in 1928 recommended transferring four loopfuls from each subculture of the culture-germicide mixture to a second tube of broth. In this way the germicide would be diluted beyond the concentration at which it would be able to exert a bacteriostatic action. By this technic he found that bichloride of mercury in a dilution of 1:200 to 1:300 failed to kill *Staphylococcus aureus* in fifteen minutes' exposure. This concentration of bichloride of mercury is three to five times as great as usually recommended and is still incapable of destroying in fifteen minutes' exposure the vegetative cells of the common pus producing organism. Mere dilution of the inoculum does not eliminate the bacteriostatic action of the mercurial contained in it. Heinemann⁶ pointed out that dilution of the inoculum as in the Shippen technic gave falsely high killing values in several instances. This was also demonstrated by Morton⁷ with soaps containing mercurial compounds. It has been pointed out also that dilution does not neutralize the mercury which may be bound to the bacterial cell.

Bacterial cells which have been weakened by exposure to the action of a germicide are more susceptible to the bacteriostatic action of the germicide, so it is more difficult to eliminate the bacteriostatic action of the chemical. This was pointed out by Geppert² and was

5. Shippen, L. P.: A Fallacy in the Standard Methods of Examining Disinfectants, Am. J. Pub. Health 18: 1231-1234, 1928.

6. Heinemann, B.: A Comparison of Methods Used for Evaluating the Bactericidal Properties of Mercurial Compounds, J. Am. Pharm. A. (Scient. Ed.) 32: 298-301, 1943.

7. Morton, Harry E.: "Germicidal" Soaps: I. The Importance of a Clean Skin, the Action of Soaps in Freeing the Skin of Viable Micro-organisms, and Methods for Testing the Efficiency of Germicidal (Medicated) Soaps, J. A. M. A. 124: 1195-1201 (April 22) 1944.

emphasized in one of the early textbooks on bacteriology.⁸ For a fuller discussion of the shortcomings of mercurial compounds as disinfectants reference should be made to the report of Brewer⁹ in 1939.

A method more reliable than mere dilution for eliminating the bacteriostatic effect of a mercurial compound in the subculturing medium during the testing for germicidal action is chemical neutralization of the mercurial. Geppert employed ammonium sulfide to inactivate the mercury in the culture-germicide mixture which was subcultured and found that the dilutions of bichloride of mercury which were germicidal were much lower than when cultured by ordinary methods. Hunt¹⁰ employed hydrogen sulfide for the same purpose. The thioglycollate medium described by Brewer¹¹ in 1940 for growing micro-organisms anaerobically was also found to be capable of neutralizing the bacteriostatic action of mercurial compounds.¹² The National Institute of Health made this the official medium for the sterility testing of biological products beginning July 1942, and it has been subsequently modified to a slight extent (Pittman,¹³ N. I. H. circular.¹⁴)

The objectives of our experiments were to determine (1) the effect of some of the organic mercurial compounds on an organism pathogenic for man and mouse and (2) whether the growth of the test organism in thioglycollate medium parallels infectivity for the animal body.

MATERIALS AND TECHNIQUES

Test Organism.—It is desirable to select for test organisms those which are pathogenic for man as well as for some laboratory animal. We selected for this work *Streptococcus pyogenes*, strain C203M. It gave a good reaction with group A serum (Lancefield). On extract agar containing 5 to 10 per cent normal horse blood the streptococcus colonies were surrounded by large zones of hemolysis of the red blood cells. The red blood cells in blood broth were readily hemolyzed. The culture was maintained in blood extract broth composed of Bacto-beef extract 0.3 per cent, Parke-Davis peptone 1 per cent, sodium chloride 0.5 per cent and distilled water. The p_H was approximately 7.2 after sterilization. Sterile defibrinated horse blood was added to the amount of 10 per cent. Approximately 10 cc. of medium was contained in the culture tubes. Fresh subcultures were made by transferring 0.5 cc. of a previous culture to a tube of fresh medium, incubating at 37 C. for twenty-four hours, then storing in the refrigerator at 4-11 C. The stock cultures were routinely subcultured every three months. Three out of three mice were killed within sixty-five hours following the intraperitoneal injection of 1 cc. of a 1:10,000,000 (1×10^{-7}) dilution of a twenty-four hour culture. The lethal dose constituted four colonies when grown in blood extract agar.

Experimental Animal.—White Swiss mice weighing 17-20 Gm. each were employed.

Culture Mediums.—Bacto-Anaerobe medium with dextrose, experimental, contained in each liter Proteose-peptone No. 3, Difco, 20 Gm., Bacto-beef extract 3 Gm., Bacto-yeast extract 3 Gm., malt extract, Difco, 3 Gm., dextrose 5 Gm. and agar 1 Gm. Reaction of the medium after sterilization was approximately p_H 7.3.

Bacto-cooked meat medium No. 2 was a special lot for a contaminated wound project. Each liter of medium contained beef heart 454 Gm., proteose-peptone, Difco, 20 Gm., dextrose 2 Gm. and sodium chloride 5 Gm. Reaction of the medium after sterilization was approximately p_H 7.4.

Bacto-tryptose phosphate broth contained in each liter Bacto-tryptose 20 Gm., Bacto-dextrose 2 Gm., sodium chloride 5 Gm. and disodium phosphate 2.5 Gm. Reaction of the medium after sterilization was approximately p_H 7.3.

Hydrolyzed casein. This was received from Dr. C. M. Brewer, U. S. Department of Agriculture, who stated that it was "Trypticase-Pancreatic Digest of Casein" received from the Baltimore Biological Laboratory. A 3 per cent solution in distilled water containing 0.5 per cent sodium chloride was used. It had a reaction of p_H 6.8 after sterilization.

Bacto-fluid thioglycollate medium, Linden formula, was prepared in accordance with section 4 b of the National Institute of Health Bulletin "Fluid Thioglycollate Medium for the Sterility Test," dated Dec. 30, 1941. Each liter of the medium consisted of Proteose-peptone No. 4, Difco, 30 Gm., Bacto-dextrose 5 Gm., Bacto-yeast extract 2 Gm., sodium thioglycollate, Difco, 1 Gm., Bacto-agar 0.5 Gm., sodium chloride 5 Gm., dipotassium phosphate 2.5 Gm., Bacto-methylene blue (DA-6) 0.002 Gm. and distilled water. The reaction was approximately p_H 7.5 after autoclaving.

For a plating medium beef extract agar, made by adding 2 per cent agar to the beef extract broth, was used, to which was added 10 per cent sterile, defibrinated horse blood.

Disinfectants.—Samples of the three organic mercurial compounds "Mercurochrome," "Merthiolate" and "Metaphen" were purchased over the counter from various pharmacies and used undiluted from the original packages or diluted as for the standard phenol coefficient test.¹⁵

Technic.—In performing the disinfection tests, 1 cc. of a 24 hour old blood broth culture, $\pm$ 2 hours, was added to 10 cc. of the disinfectant in a test tube. After thorough mixing, 5 cc. of the culture-disinfectant mixture was transferred to an Esmarch dish to facilitate filling syringes. At intervals of five, ten and fifteen minutes 1 cc. of the culture-disinfectant mixture was removed from the test tube, 0.5 cc. inoculated into a tube containing about 11 cc. of blood broth, and the other 0.5 cc. portion inoculated into a tube containing about 11 cc. of fluid thioglycollate medium. At the ten minute interval 1 cc. portions or less, if the disinfectant was toxic for mice, of the culture-disinfectant mixture was injected intraperitoneally into white mice weighing 17-20 Gm. each. The temperature of medication was room temperature. After all subcultures had been made the tubes were thoroughly shaken and then incubated at 37 C. Subculture tubes which did not show growth were kept under observation for seven

8. Sternberg, G. M.: A Manual of Bacteriology, Baltimore, William Wood & Co., 1892.

9. Brewer, John H.: The Antibacterial Effects of the Organic Mercurial Compounds, with Special Reference to Their Use as Germicides for the Sterilization of Surgical and Dental Instruments, J. A. M. A. **112**: 2009-2018 (May 20) 1939.

10. Hunt, G. A.: The Use of Cutaneous Staphylococcus Lesions in Mice for the Evaluation of the Germicidal Activity of Disinfectants, J. Infect. Dis. **60**: 232-237, 1937.

11. Brewer, John H.: Clear Liquid Mediums for the "Aerobic" Cultivation of Anaerobes, J. A. M. A. **115**: 598-600 (Aug. 24) 1940.

12. Marshall, M. S.; Gunnison, J. B., and Luxen, M. P.: Test for the Sterility of Biologic Products, Proc. Soc. Exper. Biol. & Med. **43**: 672-673, 1940. Brewer.¹¹

13. Pittman, M.: A Study of Fluid Thioglycollate Medium for the Sterility Test, J. Bact. **51**: 19-32, 1946.

14. National Institute of Health Circular: Culture Media for the Sterility Test, first revision, Jan. 15, 1945.

15. Ruehle, G. L. A., and Brewer, C. M.: United States Food and Drug Administration Methods of Testing Antiseptics and Disinfectants, Circular No. 198, U. S. Dept. of Agriculture, Washington, D. C., December 1931.

days before discarding. Growth in the subculture tubes was checked microscopically and in some cases by streaking onto blood agar plates. Streptococci were demonstrated in all critical tubes. The heart's blood from some of the mice which died following the injection of each culture-germicide mixture was streaked on blood agar plates and hemolytic streptococcus colonies were demonstrated. Representative cultures isolated from the heart's blood cultures were demonstrated to be group A by the technic of Brown.¹⁶

Controls.—Comparable amounts of the germicides which were contained in the dose of germicide-culture mixtures were injected intraperitoneally into mice to prove that the mice were not killed by the germicide. Virulence of the culture was demonstrated by adding 1 cc. of culture to 10 cc. of sterile distilled water, allowing to stand at room temperature for ten minutes, then injecting 1 cc. into each of four mice. Hemolytic streptococci were demonstrated in the heart's blood

because the loop was unsatisfactory, and Tice and Pressman¹⁹ employed 0.05 cc. amounts. The toxicity of some of the compounds did not permit us to inject mice with more than 0.1 or 0.2 cc. The volume of culture-germicide mixture transferred by means of a pipet is arbitrary. By transferring larger volumes a more critical test is placed on the germicide, but this should not present an obstacle if the compound is an effective germicide.

EXPERIMENTAL

It would be very advantageous if cultures of virulent hemolytic streptococci could be grown in a blood-free culture medium with virulence of the culture maintained. The culture of hemolytic streptococcus strain C203M, recently passed through mice, was inoculated into the following five mediums: (1) extract broth containing 10 per cent horse blood, (2) Bacto-anaerobe medium, experimental, (3) Bacto-cooked meat medium, (4) Bacto-tryptose phosphate broth and (5) hydro-

TABLE 1.—The Number of Hemolytic Streptococci Present in Twenty-Four Hour Cultures in Various Culture Mediums and the Virulence of the Streptococci for White Mice

Dilution of culture.....	10 ⁻³	10 ⁻⁴	10 ⁻⁵	10 ⁻⁶	10 ⁻⁷
Medium.....		Extract broth + 10 per cent horse blood			
Number of colonies.....	(47,000)*	(4,700)*	(470)*	47	4
Three mice injected with each dilution.....	Died 20 hrs. Died 20 hrs. Died 20 hrs.	Died 20 hrs. Died 22 hrs. Died 22 hrs.	Died 22 hrs. Died 22 hrs. Died 22 hrs.	Died 65 hrs. Died 65 hrs. Died 65 hrs.	Died 65 hrs. Died 65 hrs. Died 65 hrs.
		Bacto anaerobe medium with dextrose, experimental			
Number of colonies.....	(26,000)*	(2,600)*	Est. 200	26	7
Three mice injected with each dilution.....	Died 20 hrs. Died 22 hrs. Died 22 hrs.	Died 65 hrs. Died 65 hrs. Died 65 hrs.	Died 22 hrs. Died 65 hrs. Died 120 hrs.	Died 65 hrs. Died 65 hrs. Died 65 hrs.	Died 65 hrs. Survived Survived
		Bacto-cooked meat medium number 2, experimental			
Number of colonies.....	(57,000)*	(5,700)*	(570)*	57	4
Three mice injected with each dilution.....	Died 20 hrs. Died 22 hrs. Survived	Died 65 hrs. Died 65 hrs. Died 65 hrs.	Died 65 hrs. Died 72 hrs. Survived	Died 65 hrs. Survived Survived	Survived Survived Survived
		Bacto-tryptose phosphate broth			
Number of colonies.....	(19,700)*	(1,970)*	197	20	3
Three mice injected with each dilution.....	Died 65 hrs. Died 65 hrs. Died 65 hrs.	Died 65 hrs. Survived Survived	Died 65 hrs. Died 7 days Survived	Died 72 hrs. Died 72 hrs. Survived	Survived Survived Survived
		Hydrolyzed casein medium			
Number of colonies.....	120	12	1	0	0
Three mice injected with each dilution.....	Died 65 hrs. Survived Survived	Died 65 hrs. Died 72 hrs. Died 8 days	Survived Survived Survived	Survived Survived Survived	Survived Survived Survived

* Colonies too numerous to count. Number estimated from colony count of plate with high dilution of inoculum. Survived = mice alive and healthy at end of eight days, when experiment was terminated.

after death of the mice. Representative cultures isolated from the heart's blood of the dead mice were demonstrated to be group A by the technic of Brown.¹⁶

The transferring of a measured amount of culture-germicide mixture to the subculture tubes and to mice differed from the standard technic of transferring one loopful, but we feel that it is desirable and advantageous. The standard loop is estimated to hold about 0.02 cc. By transferring a larger volume one has a better chance of transferring viable organisms if they exist in the culture-germicide mixture. This is desirable, as our results indicate that a minimum of four streptococcus organisms of the strain used were required to produce a fatal infection in mice. Garrod¹⁷ in 1935 pointed out that "an adequately large number of bacteria should be added to cultures in which bacteriostatic action is being studied." We found that a volume of 0.5 cc. could be employed conveniently in our *in vitro* tests. Tobie and Orr¹⁸ transferred inoculums of 0.02 cc. with pipets

lyzed casein medium. Serial transfers were carried through the mediums until the cultures had been grown in each medium for nineteen successive transfers. A

TABLE 2.—Comparison of Two Culture Mediums, with Modifications for Their Ability to Support Growth of Hemolytic Streptococci

One medium capable of neutralizing the bacteriostatic action of mercurial compounds and one medium incapable of such action

Dilution of inoculum.....	10 ⁻⁵	10 ⁻⁶	10 ⁻⁷	10 ⁻⁸	10 ⁻⁹	10 ⁻¹⁰
Number of colonies developing from an inoculum of 0.5 cc.....	..	..	11	2	0	..
Estimated number of organisms in inoculum	1,100	110	11	1 or 2	1 or 0	..
Beef extract broth.....	+	+	+	+	+	+
Beef extract broth + 10 per cent blood..	+	+	+	+	+	+
Beef extract broth + 0.5 per cent glucose +	+	+	+	+	+	+
Beef extract broth + 0.2 per cent cerulose +	+	+	+	+	+	+
Beef extract broth + 10 per cent blood + 0.2 per cent cerulose.....	+	+	+	+	+	+
Bacto-thioglycollate medium, Linden's formula	+	+	+	+	+	+

16. Brown, J. Howard: A Simplified Method for Grouping Hemolytic Streptococci by the Precipitin Reaction, J. A. M. A. 111: 310-311 (July 23) 1938.

17. Garrod, L. P.: The Effect of Bacterial Numbers on Minimum Bacteriostatic Concentrations, J. Infect. Dis. 57: 247-251, 1935.

18. Tobie, W. C., and Orr, M. L.: Determination of Phenol Coefficients in Presence of Surface Tension Depressants, J. Lab. & Clin. Med. 29: 767-768 (July) 1944.

sixth medium, Bacto-thioglycollate medium, Brewer's formula, was also included, but contamination of the culture caused us to drop that medium from the series.

19. Tice, L. F., and Pressman, R.: Antiseptics of the Quaternary Ammonium Type in the Presence of Positive and Negative Gelatin, J. Am. Pharm. A. (Sc. Ed.) 34: 201-204 (Aug.) 1945.

When the growths in the nineteenth serial transfers in each medium were 24 hours old, serial dilutions of each culture were made in extract broth. One cc. of each dilution was inoculated intraperitoneally into each of 3 mice, and 1 cc. was made into a blood agar poured plate. The results are summarized in table 1.

The results summarized in table 1 indicate that extract broth containing 10 per cent horse blood satisfactorily supported growth of the hemolytic streptococci and the organisms possessed the highest virulence for mice. Mediums not containing blood were not as satisfactory.

For the work to be described it is necessary to have two culture mediums which will support growth of hemolytic streptococci equally well. One of the culture mediums must be capable of neutralizing the bacteriostatic action of mercurial compounds, and for this

ten minutes was not a disinfectant because mice injected with such mixtures invariably died. In all 16 out of 17 mice injected with such mixtures died. Mercurochrome 2 per cent and metaphen 1:500 failed to kill streptococci within an exposure period of even fifteen minutes when the culture-germicide mixtures were subcultured into thioglycollate medium, and they failed to protect all of the mice from fatal infections. When the cultures of streptococci were treated with the marketed concentrations of these compounds diluted 1:2 and then injected into mice nearly all of the mice died. Perhaps the reason that growth of the streptococci in the thioglycollate subculturing medium was not accompanied with killing of all the animals is that fewer organisms are needed to initiate growth in the culture medium than are needed to kill a mouse. This is evident from the data in tables 1 and 2.

TABLE 3.—Results* Obtained When Various Compounds Were Injected into Mice

And when mixtures of streptococci and these compounds were subcultured into blood broth and thioglycollate medium after intervals of exposure of 5, 10, and 15 minutes and the culture germicide mixture injected into mice after an exposure of ten minutes

Material	Dilution	Blood Broth, Minutes			Thioglycollate Medium, Minutes			Num- ber of Mice In- jected	Amount In- jected	Results
		5	10	15	5	10	15			
Mercurochrome 2 per cent	Undiluted	..	..	..	..	..	..	4	0.1 cc.	3 survived, 1 died 63 hours.
Mercurochrome 2 per cent	1:2	..	..	..	..	..	..	4	0.1 cc.	All survived.
Mercurochrome 2 per cent	Undiluted	—	—	—	+	+	+	4	0.1 cc.	1 died <15 hours, gram negative rod isolated from heart's blood. 1 died <15 hours, spreader isolated from heart's blood. 1 died 25 hours, no hemolytic streptococci isolated from heart's blood. 1 died 40 hours, hemolytic streptococci isolated from heart's blood.
Mercurochrome 2 per cent	1:2	—	—	—	+	+	+	4	0.1 cc.	All died <40 hours. Hemolytic streptococci isolated from heart's blood of all of the mice.
Metaphen 1:500.....	Undiluted	..	..	..	..	..	..	4	0.1 cc.	All survived.
Metaphen 1:500.....	1:2	..	..	..	..	..	..	4	0.2 cc.	All survived.
Metaphen 1:500.....	Undiluted	—	—	—	+	+	+	4	0.1 cc.	2 survived, 2 died. Heart's blood of 1 mouse cultured and hemolytic streptococci found.
Metaphen 1:500.....	1:2	—	—	—	+	+	+	4	0.2 cc.	1 died 23 hours. 2 died <40 hours. Hemolytic streptococci in the heart's blood. 1 survived.
Merthiolate 1:1,000.....	Undiluted	..	..	..	..	..	..	2	1 cc.	All survived.
Merthiolate 1:1,000.....	1:2	..	..	..	..	..	..	2	1 cc.	All survived.
Merthiolate 1:1,000.....	Undiluted	—	—	—	+	+	+	4	0.5 cc.	All died in 24 hours. Heart's blood of 2 mice cultured and hemolytic streptococci in both.
Merthiolate 1:1,000.....	1:2	—	—	—	+	+	+	4	0.5 cc.	3 died in 24 hours. 1 died in 48 hours. Heart's blood of 1 mouse cultured and hemolytic streptococci found.
Phenol 1:80.....	.....	..	..	..	..	..	..	4	0.5 cc.	All survived.
Phenol 1:80.....	.....	—	—	—	+	—	—	4	0.5 cc.	3 survived, 1 died ½ hour from trauma during injection.
Phenol 1:100.....	.....	—	—	—	+	+	—	4	0.5 cc.	All survived.
Phenol 1:120.....	.....	—	—	—	+	+	+	4	0.5 cc.	All survived.
Phenol 1:140.....	.....	—	—	—	+	+	+	4	0.5 cc.	1 died 24 hours; 2 died <41 hours. Hemolytic streptococci isolated from heart's blood of all 3 mice. 1 survived.

* These results are from one experiment but are typical of the results usually obtained in the various tests which were made.
— = no growth; + = growth of the test organism. .. = toxicity test on disinfectants.

medium we selected Bacto-thioglycollate medium, Linden's formula. The other medium must be incapable of neutralizing such bacteriostatic action, and beef extract broth with the addition of various substances was tried. The results are summarized in table 2.

From the results summarized in table 2, beef extract broth containing 10 per cent horse blood supported growth of hemolytic streptococci C203M as well as did Bacto-thioglycollate medium, Linden's formula. The addition of 10 per cent blood to the extract broth was preferred to 0.2 per cent cerulose because of the ease of reading growth in the medium containing blood and because it is the medium in which the organisms are maintained in culture.

Typical results obtained from numerous experiments wherein the cultures of hemolytic streptococci were exposed to the action of the various compounds and then subcultured and also injected into mice are given in table 3. It can be seen that, if subculturing of the mercurial germicide-culture mixture into thioglycollate medium resulted in growth of the culture, the organisms are still capable of producing a fatal infection in the animal body. Merthiolate 1:1,000, aqueous, when allowed to act on a culture of hemolytic streptococci for

COMMENT

In a preliminary report of this work²⁰ we made the statement that metaphen 1:500 was germicidal in an exposure of ten minutes but not of five minutes. These results were obtained when the culture-germicide mixture was subcultured to blood broth and at the end of the experiment transfers were made from each subculture blood broth tube to a second tube of blood broth and to a tube of thioglycollate medium. The subculturing from the primary subculture tubes, as recommended by Shippen,⁶ does not give results as reliable as when the subcultures are made directly into a medium which will neutralize the bacteriostatic action of the mercurial compound as recommended by Brewer¹¹ and as required by the National Institute of Health¹⁴ in the sterility testing of biologic products. In this particular experiment only 1 out of 4 mice injected with the mixture of culture and metaphen 1:500 died, but in another experiment 2 out of 4 animals died. The marketed solution of a germicide should be more effective in destroying pathogenic organisms.

20. Morton, H. E.; North, L. L., and Engley, F. B., Jr.: In Vitro and In Vivo Studies on the Bacteriostatic and Bactericidal Actions of Mercurial Disinfectants on Hemolytic Streptococci, J. Bact. 50:125-126 (July) 1945.

Johnson and Meloney²¹ reported that merthiolate was ineffective in preventing contamination of blood plasma, and Morgan, Simmons and Riggs²² observed that organisms exposed to a concentration of 1:1,000 merthiolate for seven days at 5 C. proved viable when subcultured to thioglycollate medium. The longest period of exposure of hemolytic streptococci to merthiolate 1:1,000 was fifteen minutes at room temperature, and we always found the cultures viable when subcultured in thioglycollate medium. Although Graydon and Biggs²³ reported that the lag period may extend to weeks or even months when organisms are treated with sublethal doses of antiseptic, such as merthiolate, we observed no change in our subculture tubes between the second and sixth days of incubation, so terminated our observations on the sixth day. The results obtained within that period were obvious and satisfied the purpose of our experiment.

Finding that the marketed solutions of mercurochrome, metaphen and merthiolate failed to kill all the vegetative cells in a culture of hemolytic streptococci in vitro is not surprising in view of the results published by Hoyt, Fisk and Burde²⁴ and Nye.²⁵ It was to be expected that Green and Birkeland²⁶ would fail to find any therapeutic action when merthiolate (1:10,000 to 1:30,000) and metaphen (1:5,000 to 1:20,000) were applied to the chorioallantoic membranes inoculated with *Staphylococcus aureus*. In working with metaphen, mercurial M, merthiolate, mercurochrome and bichloride of mercury, Smith, Czarnetzky and Mudd²⁷ came to the conclusion that the activity of a mercurial antiseptic in serum is reduced to 0.33 to 0.007 per cent of its activity in saline solution. The marketed solutions of the three mercurials studied did not completely kill cultures of hemolytic streptococci in distilled water in an exposure of ten minutes, so any further reduction in antibacterial activity by the presence of serum would not leave much to be expected in the way of germicidal action. In spite of these facts the label on a bottle of "Solution Merthiolate, 1:1,000, Stainless" purchased as recent as June 1947 states that it is "a stable, stainless, organic mercury compound solution of high germicidal value, particularly in serum and other protein media." It is not highly germicidal and especially does not possess high germicidal value in the presence of serum and other protein mediums. The loss of antibacterial activity of mercurials in the presence of serum proves their incompatibility with serum. Not only is the antibacterial action of mercurial compounds much reduced in the presence of blood serum, but Waller²⁸ has found that a final concentration of 1:5,000 merthiolate destroyed the anti-Rh agglutinins in human serums.

The comparative in vitro studies of mercurochrome, metaphen and merthiolate on embryonic tissue cells and bacterial cells by Salle and Lazarus²⁹ cannot be ignored. These investigators found that metaphen, merthiolate and mercurochrome were 12, 35 and 262 times respectively more toxic for embryonic tissue cells than for *Staphylococcus aureus*. Nye²⁵ and Welch³⁰ also found the same three mercurial compounds more toxic for leukocytes than for bacterial cells. Not only is there the direct toxic action of the mercurial compounds on the cellular and humoral components of the animal body, but there is also the possibility of sensitization. Hollander³¹ has recently reported a case of contact dermatitis produced by tincture of merthiolate.

We wished to learn whether organisms put in a state of bacteriostasis by a mercurial compound were harmless if introduced into the animal body. It is quite obvious that they are not harmless. There is a good correlation between the growth of hemolytic streptococci in thioglycollate medium and fatal septicemia in mice. In view of our recent knowledge of disinfectants, we wished to learn what might be expected of the three most commonly advertised mercurial compounds. The marketed aqueous solutions of the three compounds mercurochrome, merthiolate and metaphen are not effective disinfectants because when virulent organisms are treated with the substances for as long as ten minutes and introduced into the animal body either intraperitoneally or intradermally, the animals are not protected from infection. The substances are not effective germicides, as cultures treated with them are still viable. Neither are the substances effective antiseptics, as they are incapable of preventing sepsis when the pathogenic organisms are exposed as long as ten minutes to the substances. It can be stated that the substances have a bacteriostatic action. The efficacy of employing a bacteriostatic agent for topical application is beyond the scope of this paper. We only wish to point out that a pathogenic organism placed in a state of bacteriostasis by a mercurial compound is still capable of producing a fatal septicemia if introduced into the animal body and capable of producing a localized infection if introduced into the skin.¹⁰

SUMMARY

The organomercurial compounds "mercurochrome," "merthiolate" and "metaphen," as supplied in aqueous solutions on the market, possess many shortcomings as disinfectants. Aqueous solutions of these compounds may not completely kill cultures of virulent hemolytic streptococci, in that mice receiving an intraperitoneal injection of the culture-germicide mixture, after ten minutes' exposure of the organisms to the drugs, usually die, and hemolytic streptococci can be isolated from the heart's blood after death of the mice.

Hemolytic streptococci, an example of non-spore forming pathogenic organisms, while in a state of bacteriostasis produced by a mercurial compound, are still infectious for the animal body. Bactericidal rather than bacteriostatic action of the compounds is necessary to prevent a generalized infection.

Reports in the literature indicate that these three organomercurial compounds are more toxic for embryonic tissue cells and leukocytes than for bacterial cells.

21. Johnson, B., and Meloney, F. L.: *Blood Substitutes and Blood Transfusion*, edited by Stuart Mudd and William Thalheimer, Springfield, Ill., Charles C Thomas, 1942, p. 263.

22. Morgan, F. G.; Simmons, R. T., and Biggs, C. L.: *Pooled Human Serum: A Note on Testing for Sterility in the Presence of Certain Antiseptics*, M. J. Australia **11**: 515-517 (Dec. 12) 1942.

23. Graydon, J. J., and Biggs, C. L.: *Some Factors Influencing Bacterial Survival in the Presence of Antiseptics*, M. J. Australia **11**: 513-515 (Dec.) 1942.

24. Hoyt, A.; Fisk, R. T., and Burde, G.: *The Antibacterial Action of Certain Disinfectants*, Surgery **12**: 786-790 (Nov.) 1942.

25. Nye, R. N.: *The Relative In Vitro Activity of Certain Antiseptics in Aqueous Solution*, J. A. M. A. **108**: 280-287 (Jan. 23) 1937.

26. Green, T. W., and Birkeland, J. M.: *The Use of the Developing Chick Embryo as a Method of Testing the Antibacterial Effectiveness of Wound Disinfectants*, J. Infect. Dis. **74**: 32-36 (Jan.-Feb.) 1944. Nye.²⁵

27. Smith, D. C.; Czarnetzky, E. J., and Mudd, Stuart: *The Mechanism of Inactivation of Mercurial Antiseptics by Serum and Its Implications Regarding the Possibilities of Intravenous Antiseptics*, Am. J. M. Sc. **102**: 790-808 (Dec.) 1938.

28. Waller, R. K.: *The Action of Sodium Ethylmercurithiosalicylate on Human Anti-Rh Serums*, Am. J. Clin. Path. (Tech. Supp.) **8**: 116-117, 1944.

29. Salle, A. J., and Lazarus, A. S.: *A Comparison of the Resistance of Bacteria and Embryonic Tissue to Germicidal Substances: I. Merthiolate*, Proc. Soc. Exper. Biol. & Med. **32**: 665-667 (Feb.) 1935; II. Metaphen, pp. 937-938; III. Mercurochrome, pp. 1057-1060.

30. Welch, H.: *Mechanism of the Toxic Action of Germicides on Whole Blood Measured by the Loss of Phagocytic Activity of Leukocytes*, J. Immunol. **37**: 525-533, 1939.

31. Hollander, L.: *Contact Dermatitis Produced by Tincture of Merthiolate*, Arch. Dermat. & Syph. **50**: 123 (Aug.) 1944.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 3, 1948

THE PHARMACEUTICAL-MEDICAL RESEARCH FOUNDATION

When the American Pharmaceutical Manufacturers' Association awarded its plaque to the American Medical Association on December 16, the occasion was signaled by an announcement of the formation of a new foundation to be supported in major part by the pharmaceutical industry, to be devoted to scientific research and to represent a joint effort of the pharmaceutical and medical professions. This foundation, to be called the Pharmaceutical-Medical Research Foundation, is to be modeled after the Nutrition Foundation, which already has a record of important contributions to the advancement of knowledge in that field. The Nutrition Foundation was developed largely through the interest of Mr. Charles Wesley Dunn, general counsel for the American Pharmaceutical Manufacturers' Association.

While many millions of dollars are spent annually in the United States on research of a practical and applied character, the comparative amounts expended on basic research are infinitesimal. Before controlling many of the diseases which still baffle medical science, extensive studies are required related to the chemical and physical changes that occur in tissues and to the physiology of the body—particularly concerning substances taken into the body and their ultimate fate. What part do childhood infections, nutritional deficiencies, fatigue and mental stresses play in the development of the degenerative diseases? These questions and many hundreds like them require positive answers. From such answers will come specific methods of diagnosis, prevention and treatment, which will mean increasing years of health and happiness for more and more persons.

A committee, including representatives of the pharmaceutical industry and the medical profession, was organized to establish the new foundation. The representatives from the pharmaceutical industry are Mr. S. DeWitt Clough, chairman of the board, Abbott Laboratories; Mr. A. H. Fiske, vice president, Eli Lilly & Company; Mr. Elmer H. Bobst, president,

William R. Warner & Co., Inc.; Mr. John L. Smith, president, Chas. Pfizer & Co., Inc.; Mr. S. Barksdale Penick Jr., president, S. B. Penick & Co.; Mr. M. C. Eaton, president, Eaton Laboratories, Inc., and Mr. Charles Wesley Dunn, general counsel for the American Pharmaceutical Manufacturers' Association. The representatives from the medical profession are the following officers of the American Medical Association: Dr. R. L. Sensenich, President-Elect; Dr. E. L. Henderson, chairman of the Board of Trustees; Dr. Ernest E. Irons, secretary of the Board of Trustees; Dr. Morris Fishbein, Editor of THE JOURNAL, and Dr. Austin Smith, secretary of the Council on Pharmacy and Chemistry. Dr. Sensenich is chairman of the committee.

The foundation will be a wholly public institution in purpose, conduct and service; its governing board will include distinguished representatives of the general public, in addition to leading representatives of the pharmaceutical industry and medical profession. The board will determine its program of scientific research, on the basis of a recommendation by an authoritative scientific advisory committee and the advice of an eminent scientific director. Much of the initial basic research sponsored by the foundation will be in the field of the degenerative diseases, where there is urgent need.

VOLUNTARY ACCELERATION OF HEART

According to Favill and White¹ only thirteen persons with the power to accelerate the heart beat were recorded in medical literature up to 1917. In only one instance were electrocardiographic studies made. Much discussion has been printed as to the mechanism of this acceleration, especially as to whether it is purely a removal of vagal influences or primarily an accelerator nerve action. The voluntary acceleration of the heart rate in the case reported by Favill and White began almost immediately after the subject had willed it to begin and one second after the command was given by the observer. The greatest acceleration recorded electrocardiographically in their case was 63 beats, from a rate of 98 to 161. Atropine in a dose of $\frac{2}{1,000}$ grain subcutaneously increased the heart rate from 82 to 105 in half an hour. The patient was able to increase his heart rate at the height of the atropine effect by 20 beats, the rate rising from 105 to 125. On a second occasion one hour after injection of $\frac{1}{50}$ grain of atropine, voluntary acceleration was attempted and resulted in an abrupt increase of the pulse rate from 140 to 168 per minute. With the removal of vagal action, the voluntary increase in the heart rate appears to be the result of the accelerator nerve action. There was a definite rise in blood pressure following the onset of voluntary tachycardia. The systolic pressure rose from 124 to 146 and the diastolic from 80 to

1. Favill, J., and White, P. D.: Voluntary Acceleration of the Heart Beat, *Heart* 6: 175, 1917.

110. Dilatation of the pupils occurred within one second after the word to accelerate the pulse was given. The acceleration appeared to depend on an effort of the will, and the strain was as tiring as that produced by holding up a heavy weight. Distinct relief was felt with the cessation of acceleration. Change in the situation of the pacemaker with the onset of acceleration was not apparent. The observers felt that the voluntary increase of the heart rate in their subject was the result in great part at least of the action of the accelerator nerve mechanism and that it was not due solely or chiefly to the withdrawal of vagal action. The changes in the electrocardiographic deflections during the acceleration were those which are known to occur when the sympathetic nerves are stimulated experimentally.

West and Savage² reported a young medical student who was apparently free from all physical and neurotic defects and who was able to increase his heart rate voluntarily. A radial tracing showed that the heart rate began to increase almost immediately after the word of command and reached its maximum after about ten heart cycles. The greatest voluntary acceleration recorded in this subject was one of 27 beats per minute. Pressure on the right vagus produced a prompt slowing of the heart rate from 72 to 48 beats per minute. The results following injection of atropine were at variance with those reported by Favill and White, who did not find reduction in the ability to accelerate. A definite and corresponding decrease in the sinus arrhythmia and the ability to accelerate occurred at the height of the atropine effect. Had atropine been given in sufficiently large dose to paralyze completely the vagus terminals, the ability voluntarily to change the rate would have been abolished, or nearly so. The investigators therefore believed that persons with higher degrees of voluntary increase in rate may be able to add accelerator stimuli to a primarily vagus release.

Carter and Wedd³ studied a man who for many years experienced attacks of paroxysmal tachycardia which he learned to cut short by a voluntary effort. He was able to initiate an attack of tachycardia as well as to control it without any evident muscular effort. The dominant rate of the pathologic rhythm in the attacks of tachycardia remained constant at approximately 200 beats per minute. Pressure over both the right and the left vagus failed to induce the slightest change in either the rate or the cardiac rhythm. While under the influence of atropine the man was unable to break through the rate, due to the cardiac escape, and thus induce a higher speed of the ectopic rhythm. That all inhibitory vagal control had been removed was evidenced by the failure to control the rate under

atropine subjectively and by the conspicuous physiologic effects of the drug. The reaction to atropine in this case is proof that the investigators were not dealing with an ectopic focus entirely removed from neurogenic control. Following partial recovery from the atropine effect, two hours after its administration, the man again was able to induce the pathologic rhythm and could retard slowly his rate of 106 down to 85 per minute. In view of the constant similarity of the ventricular complex, the constancy of the conduction time and the constant time relationship of the extrasystoles to the preceding ventricular contraction and the direction of the P wave, the authors assumed that they were dealing with an ectopic rhythm originating in the upper level of the atrium near the pacemaker, conspicuously under the control of subjective inhibitory reflexes but uninfluenced by vagal stimulation. They did not find demonstrable evidence of any accelerator influence or control over the tachycardia, in spite of the general inferences supporting such a view.

The case reported by Feil and his associates⁴ is interesting because of association with the Wolff-Parkinson-White syndrome. Their patient, a medical student, first learned voluntarily to dilate his pupils. After repeated experiences he was able to dissociate the effort to dilate his pupils and to concentrate on the will to accelerate his heart. He was subject to attacks of paroxysmal tachycardia five or six times a year. These attacks started and stopped suddenly and were unrelated to any effort at voluntary acceleration. The pressure on carotid sinus did not affect either acceleration or deceleration. An experiment to determine the ability of the subject to maintain sustained acceleration was performed. The control rate was 76; 1.12 seconds after the order "fast" was given the rate rose to 109, and in five cycles it rose to 146, an increase of 70 beats per minute. He was able to maintain acceleration for 1 minute and 55 seconds, the rate falling to 84 at the end of the experiment. The case is unique because of its association with anomalous ventricular excitation characteristic of the Wolff-Parkinson-White syndrome. Epinephrine and atropine given in physiologic doses did not prevent the ability of the subject to control his heart action. Epinephrine appeared to have an augmentive effect on acceleration. Drugs that increase vagus tone, such as digitalis, quinidine and ergotamine tartrate, did not prevent the acceleration and deceleration. Physical means of acceleration such as changes in respiration or muscular activity were not demonstrated. The electroencephalogram demonstrated that psychic activity preceded the acceleration. The diminution in the peripheral blood flow and the dilatation of the pupils point to the importance of the impulses by way of the sympathetic system. The authors concluded that the ability of the

2. West, H. F., and Savage, W. E.: Voluntary Acceleration of the Heart Beat, *Arch. Int. Med.* 22: 290 (Sept.) 1918.

3. Carter, E. P., and Wedd, A. M.: Report of a Case of Paroxysmal Tachycardia Characterized by Unusual Control of the Fast Rhythm, *Arch. Int. Med.* 22: 571 (Nov.) 1918.

4. Feil, H.; Green, H. D., and Eiber, D.: Voluntary Acceleration of Heart in a Subject Showing the Wolff-Parkinson-White Syndrome, *Am. Heart J.* 34: 334 (Sept.) 1947.

subject to influence his heart rate was chiefly through sympathetic control, although inhibition and augmentation of vagus influences also played a part. This is in keeping with the idea that cardiac function results from the balance between the activities of the sympathetic and the parasympathetic divisions of the autonomic nervous system.

Current Comment

COR PULMONALE¹

Hypertrophy of the right ventricle of the heart, "cor pulmonale," occurs in acute, subacute or chronic form. The acute form is commonly caused by massive pulmonary emboli; death may result almost immediately. The subacute form, least frequent, is oftenest due to secondary carcinomatous infiltration of the perivascular lymphatics and of the pulmonary arterioles; occasionally the subacute lesion follows embolism of the smaller pulmonary vessels.¹ Similar changes in the right ventricle have been found in sickle cell anemia attended by multiple disseminated thromboses of the smaller pulmonary arteries.² Chronic cor pulmonale, commonest of the varieties, is associated with a greater number of anatomic changes. In 110 postmortem examinations³ enlargement of the right side of the heart was traceable to chronic obstructive emphysema in 72 (65.4 per cent). Other causes such as silicosis and bronchiectasis, tuberculosis, bronchial asthma, silico-tuberculosis, kyphoscoliosis and pulmonary arteriolar sclerosis were present less frequently in about the order named. In silicosis and bronchiectasis cor pulmonale occurs oftenest in cases of peribronchial and perivascular fibrosis rather than in the nodular fibroses that may accompany either of these diseases. In tuberculosis the hypertrophic changes in the right ventricle usually follow extensive sclerotic lesions in the lungs, while in asthma ventricular enlargement is apparently dependent on increased intravascular pressure associated with repeated paroxysms of expiratory dyspnea. In thoracic deformities, kyphoscoliosis and secondary emphysema seem to be the main factors in the production of pulmonary hypertension and hypertrophy of the right ventricle. With primary pulmonary arteriolar sclerosis, cases of pressure on the main pulmonary artery, organized vascular thrombi and schistosomiasis with parasitic invasion of the walls of the pulmonary vessels, diminution in the caliber of the vascular channels leads to increased resistance to the flow of blood and hence to hypertrophy of the right ventricle.

1. Greenspan, E. B.: Carcinomatous Endarteritis of Pulmonary Vessels Resulting in Failure of Right Ventricle, *Arch. Int. Med.* **54**: 625, 1934.
Brill, I. C., and Robertson, T. D.: Subacute Cor Pulmonale, *ibid.* **60**: 1043, 1937.

2. Yater, W. M., and Hansmann, G. H.: Sickle Cell Anemia: New Cause of Cor Pulmonale; Report of Two Cases with Numerous Disseminated Occlusions of Small Pulmonary Arteries, *Am. J. Med. Sc.* **191**: 474, 1936.

3. (a) Scott, R. W., and Garvin, C. F.: Cor Pulmonale: Observations in Fifty Autopsy Cases, *Am. Heart J.* **22**: 56, 1941. (b) Spain, D. M., and Handler, B. J.: Chronic Cor Pulmonale, *Arch. Int. Med.* **77**: 37, 1946.

Cor pulmonale was found in 6.3 per cent of 890 post-mortem examinations of cardiac patients.^{3a} In 60 cases studied by Spain and Handler^{3b} cor pulmonale occurred oftenest in men between the ages of 50 and 65. According to Brill,⁴ the clinical features are those of the underlying pulmonary disease. Symptoms and signs include dyspnea, hemoptysis, cyanosis, polycythemia, clubbing of the fingers, engorgement of the veins of the neck, enlarged liver, generalized edema and increased venous pressure indicating failure of the right ventricle. In many instances, although the symptoms and signs of the underlying pulmonary disease merge almost imperceptibly into those of cardiac failure, the appearance of orthopnea and intensification in the degree of cyanosis are ominous portents of myocardial exhaustion.

CYANOSIS AS A SIGN OF ARTERIAL ANOXEMIA

Comroe and Botelho¹ believe that cyanosis is a poor guide for the detection of arterial anoxemia of slight to moderate degree. Stadie demonstrated that the arterial saturation in his pneumonia patients did not always correspond to the degree of cyanosis. Lundsgaard and Van Slyke have stated that approximately 5 Gm. of reduced hemoglobin must be present in 100 cc. of capillary blood to produce visible cyanosis. Utilizing the oximeter developed by Millikan, the authors¹ tested the ability of medical students and experienced clinicians to recognize the presence of arterial anoxemia by observing the appearance of cyanosis. Variable degrees of arterial oxygen saturation were obtained in normal subjects by making them inhale mixtures low in oxygen. The saturation was measured continuously by an oximeter. A total of 20 normal white men between the ages of 19 and 25 and 127 observers (105 medical students and 22 physicians) participated in this study. The majority of the 127 observers were unable to detect the presence of definite cyanosis until the arterial oxygen saturation fell to approximately 80 per cent; 25 per cent of observers did not note definite cyanosis even at arterial saturation levels of 71 to 75 per cent. The investigators state that cyanosis is seldom a reliable guide to slight or moderate arterial anoxemia and that other commonly used signs, such as rapid pulse and hyperpnea, are also unreliable. The extent of arterial anoxemia can be determined accurately in patients only by direct analysis of arterial blood. The oximeter cannot be employed to indicate the level of arterial oxygen saturation in cyanotic persons, since the instrument must be set for each at a known value. An arterial puncture can be performed, however, and a determination of oxygen saturation can be done quickly by the method of Van Slyke and Neill; the oximeter can then be set to this figure. Evaluation of therapy can be made easily by noting oximeter changes in response to the employment of oxygen by oropharyngeal catheter, tent, mask or pressure breathing.

4. Brill, I. C.: The Clinical Manifestations of the Various Types of Right-Sided Heart Failure (Cor Pulmonale), *Ann. Int. Med.* **13**: 513, 1939.

1. Comroe, J. H., Jr., and Botelho, Stella: The Unreliability of Cyanosis in the Recognition of Arterial Anoxemia, *Am. J. M. Sc.* **214**: 1 (July) 1947.

ORGANIZATION SECTION

Official Notes

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Forty-Fourth Annual Congress on Medical Education and Licensure to be held in the Red Lacquer Room, Palmer House, Chicago, February 8, 9 and 10, 1948

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OPEN MEETING

SUNDAY AFTERNOON, FEBRUARY 8, 1:30 P. M.
BUSINESS MEETING

SUNDAY EVENING, FEBRUARY 8, 8:00 P. M.
JOINT OPEN MEETING

Council on Medical Education and Hospitals of the American Medical Association and the Advisory Board for Medical Specialties
Crystal Room

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS, AMERICAN MEDICAL ASSOCIATION

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H. G. WEISKOTTEN, M.D., *Presiding*

Address of the Chairman

H. G. WEISKOTTEN, M.D., Chairman, Council on Medical Education and Hospitals, American Medical Association

The Privately Endowed Medical Schools: Their Present and Future Financing

ALAN VALENTINE, LL.D., President, University of Rochester

The Present Status of Proposed National Science Legislation

HOMER W. SMITH, Sc.D., Professor of Physiology, New York University College of Medicine

The Financial Relations of Medical Schools and Teaching Hospitals

N. W. FAXON, M. D., Director, Massachusetts General Hospital

MONDAY AFTERNOON, FEBRUARY 9, 2:00 P. M.

H. G. WEISKOTTEN, M.D., *Presiding*

The Teaching of the Clinical Aspects of Atomic Energy

ANDREW H. DOWDY, M.D., Professor of Radiology, and STAFFORD L. WARREN, M.D., Dean, University of California School of Medicine, Los Angeles

The Teaching of Rehabilitation and Physical Medicine

HOWARD A. RUSK, M.D., Professor of Rehabilitation and Physical Medicine, New York University College of Medicine
Discussion led by A. C. IYV, M.D., Vice President, Chicago Professional Colleges, University of Illinois

Preparing the Medical Student for Family Practice

WINGATE M. JOHNSON, M.D., Professor of Clinical Medicine, Bowman Gray School of Medicine

Preparing the Intern for General Practice

M. M. WEAVER, M.D., Assistant Dean, University of Minnesota Medical School
Discussion led by KARL A. MEYER, M.D., Medical Superintendent, Cook County Institutions, and Chairman, Committee on General Practice, American Medical Association; WARD DARLEY, M.D., Dean, University of Colorado School of Medicine

Motion Pictures in Medical Education

MR. RALPH CREER, Secretary, Committee on Medical Motion Pictures, American Medical Association
Discussion led by WALTER A. BLOEDORN, M.D., Dean, George Washington University School of Medicine

MONDAY AFTERNOON, FEBRUARY 9, 5:00 P. M.

RECEPTION FOR REGISTRANTS OF THE CONGRESS BY THE AMERICAN MEDICAL ASSOCIATION

Room Fourteen

THE FEDERATION OF STATE MEDICAL BOARDS

MONDAY EVENING, FEBRUARY 9, 7:00 P. M.

FEDERATION DINNER

Medical Education in Latin America

MORRIS FISHEIN, M.D., Editor, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Crystal Room

TUESDAY MORNING, FEBRUARY 10, 9:30 A. M.

R. N. WHITFIELD, M.D., *Presiding*

Address of the President

R. N. WHITFIELD, M.D., Assistant Secretary, Mississippi State Board of Health

Analysis of Existing Basic Science Laws

WALTER L. BIERRING, M.D., Secretary-Treasurer, Federation of State Medical Boards of the United States

Medical Education in Germany and Austria

IRVING S. WRIGHT, M.D., Associate Professor of Clinical Medicine, Cornell University Medical College

Licensure Evaluation of European Medical Graduates

JACOB L. LOCHNER JR., M.D., Secretary, New York State Board of Medical Examiners

Recent Legislation Affecting Medical Licensure

J. W. HOLLOWAY JR., Director, Bureau of Legal Medicine and Legislation, American Medical Association

TUESDAY AFTERNOON, 12:30 P. M.

FEDERATION LUNCHEON

Room Nine

TUESDAY AFTERNOON, FEBRUARY 10, 2:00 P. M.

Panel Discussion on Papers Presented in Forenoon Program

Discussants: R. N. WHITFIELD, M.D., WALTER L. BIERRING, M.D., IRVING S. WRIGHT, M.D., JACOB L. LOCHNER JR., M.D., and J. W. HOLLOWAY JR.

TUESDAY AFTERNOON, FEBRUARY 10, 4:00 P. M.

Business Session—Reports, Committees—Election of Officers

RADIO PROGRAMS

The A.M.A.-N.B.C. radio program, "Doctors Today," which opened Dec. 13, 1947, is scheduled to run for twenty-six consecutive weeks at 3 p. m. each Saturday, Chicago time. The exact number of stations taking the program will be announced when available; the 1947 series "Doctors—Then and Now" was broadcast by approximately one hundred and forty stations coast to coast.

"Doctors Today" is a program based on timeliness and therefore subject to change. The following schedule is tentative. Announcement of changes will be made in THE JOURNAL whenever possible, but there may be times when the program broadcast will not coincide in subject or title with that previously announced.

Whenever possible programs canceled in favor of more timely ones will be broadcast later in the series.

Following is the schedule for programs now contemplated:

January 3, Cancer.
January 10, Care of the Chronically Ill.
January 17, Alcoholism.
January 24, Federal Control of Drugs
January 31, Urgent Need for Nurses.
February 7, Health in Rural Schools.

Council on Medical Service

THE RHODE ISLAND SOCIETY'S VOLUNTARY PREPAYMENT PLAN

The house of delegates of the Rhode Island Medical Society approved in September 1947 the report of the Insurance Plan Study Committee, including Drs. Rocco Abbate, chairman, Charles J. Ainsworth, J. Murray Beardsley, Charles' L. Farrell and Arcadia Giura.

The complete report of the committee comprises three parts: a statement of principles and objectives, master schedule of surgical indemnities and participating physician's agreement.

Surgical fee schedules are admittedly to be developed according to prevailing charges for a particular locality. The basic structure for the operation of the program is contained in the statement of "Objectives and Principles."

Objectives and Principles

The Rhode Island Medical Society establishes as its objectives: (1) to increase the extent to which voluntary insurance against the cost of medical care is made available to the people of the state of Rhode Island; (2) to increase the effectiveness of such insurance through the voluntary cooperation of its members; (3) to make such insurance available at the lowest practicable cost under competitive conditions, and (4) to safeguard the physician-patient relationship deemed necessary by the society to maintain and improve the high standards of medical care in the state of Rhode Island.

Insurance Program

To attain such objectives the society hereby sponsors a program of prepaid surgical and obstetric insurance on the following principles:

1. Injuries compensable under the Workmen's Compensation Law will not be covered in this program.
2. The Master Schedule of Surgical Indemnities shall serve as a standard for use in connection with this plan where services are rendered up to and including a semiprivate level, including such extra services as are deemed necessary by the surgeon; such schedule is subject to change by the society as conditions and experience warrant.
3. The society shall make a determined effort to obtain the consent of its members to participate in the plan. Participation shall mean the doctor's agreement with the society to accept for a minimum of one calendar year he amounts in the indemnity schedule as full payment for the procedures listed therein for persons coming within the defined income group and their dependents insured under policies endorsed by the society, as hereinafter set forth; provided such persons authorize that the benefits be paid by the insurance carrier direct to the physician.
4. The society shall make a determined effort to interest all duly licensed insurance companies and the Blue Cross in underwriting this plan. Insurance company as hereafter used refers to such a duly licensed insurance company or the Blue Cross.)
5. Persons who shall receive surgical service for the indemnity fee listed in the Master Schedule of Surgical Indemnities include (a) individuals whose gross incomes do not exceed \$2,000 per year and whose gross aggregate family incomes do not exceed \$3,000 per year and (b) individuals with dependents whose gross aggregate incomes do not exceed \$3,000 per year at the time of disability. Persons whose gross incomes exceed such limits shall have such indemnity fee applied toward the physician's total bill, with such persons liable for any additional fee charged by the physician. These income limits are subject to change by the society from time to time as warranted by conditions and experience.
6. Each insurance company desiring to have its policies approved under this program shall submit to the society the policy form or forms it plans to offer with the endorsement of the society; such policy forms may include coverage in excess of that required by the society for endorsement; provided, however, no policies shall be sold under this program before Jan. 1, 1948.
7. The society shall review the policy forms and, if it finds that the indemnity schedules and other provisions in such policies, except as hereinafter noted, meet the minimum standards of coverage and believes that the promotion and sale of such policies will contribute toward the attainment of the objectives of its program, the society shall forthwith grant its consent to the use by the company of the statement "The Benefits of this Policy are Accepted and Approved by the Rhode Island Medical Society" on such policy forms and in its advertising and promotional literature to be used in connection therewith; for the sake of simplicity, some of the less frequent types of procedures may be omitted from the printed fee schedule in such policy forms, with the understanding that the attached indemnity schedule shall govern for unprinted procedures.
8. All advertisements and promotional literature involving the society's name shall be submitted to the society at least fourteen days (excluding Sundays and holidays) before its intended use, and the use of any such material shall be subject to disapproval of the society on reasonable notice to the company.
9. The society shall be under no obligation whatsoever to review the premium rate or rates of those policies submitted for its approval under this program, since it is the desire of the society to permit such rates to seek their natural levels through competition; however, the society may request any company to furnish it with the rates at which the policies are to be or are being offered to the public, and the company shall comply with such request within a reasonable time.

10. The society may request experience and enrollment figures from any insurance company and the company shall comply therewith in reasonable time, but such statistics shall not be made public in any manner which will identify any of the statistics with any one insurance company without that company's consent.

11. An insurance company whose policies are approved under this plan shall not interfere with the insured's free choice of a physician.

12. The society shall not interfere (except as hereinafter provided in paragraph 16) with an insurance company's rights and obligations under the terms of the policy form endorsed by the society, provided, however, that payments made by the insurance company under such policy for procedures not listed in the attached indemnity schedule shall be subject to review by the society.

13. An insurance company whose policies are approved under this plan may at any time, on fourteen days' prior written notice to the society (Sundays and holidays excluded), cease to issue its policies with the society's endorsement. Thereafter, such company shall not use the endorsement of the society on any new policies issued or in advertising or promotional literature in connection therewith. In such event the society's endorsement of all outstanding policies of said company shall nevertheless continue until the next following anniversary date of issue of such policies.

14. The society may at any time, on fourteen days' prior written notice to an insurance company (Sundays and holidays excluded), withdraw its consent to the use of its endorsement of any policy form and in advertising and promotional literature in connection therewith. In the event of such withdrawal (a) the company shall cease forthwith to use such endorsement on all new policies on such forms and in advertising and promotional literature in connection therewith; (b) the society's endorsement of all outstanding policies of said company on said form shall nevertheless continue until the next following anniversary date of issue of such policies; and (c) the company shall have no cause of action against the society except on proof of malice.

15. An insurance company whose policies are approved under this program shall not be prevented thereby from issuing policies which are not endorsed by the society so long as such policies and the advertising and promotional literature in connection therewith do not use the name of the society.

16. An insurance company whose policies are approved under this plan shall not make it a condition of selling any policy form endorsed by the society that the prospective policy holder shall take any additional or other form of insurance.

17. A Health Insurance Committee of the society shall confer with the insurance companies on problems which arise in connection with this program, for the purpose of taking appropriate action on administrative matters, complaints of persons insured and/or participating doctors, and, if so authorized, to act in the name of the society to carry out these principles.

Comment

The responsibility for the medical aspects of the program rests with the members of the medical profession. The medical society reserves the right to amend the indemnity schedule and also to alter the income limits for those subscribers who are to be eligible for service benefits. Provision is made for payment to surgical assistants for certain surgical procedures.

The insurance mechanics are the responsibility of the cooperating insurance companies. The program is flexible in that it permits a variety of coverages. Companies wishing to offer benefits in addition to those set forth as the minimum may do so. Likewise, those subscribers who do not qualify for service benefits may buy additional protection if desired.

The Rhode Island Plan was developed jointly by the committee and representatives of the insurance industry. It is understood that sufficient companies are interested to assure a wide distribution of coverage. Present plans anticipate that the coverage will be offered to the public in January 1948.

Coming Medical Meetings

American Medical Association Interim Session, Cleveland, Jan. 5-8.
Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Industrial Health, Cleveland, Jan. 5-6. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Chicago, Palmer House, Feb. 9-10. Dr. Donald G. Anderson, 535 North Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Chicago, Palmer House, Feb. 6-7.
Dr. F. S. Crockett, 535 N. Dearborn St., Chicago 10, Chairman.

American Academy of Orthopaedic Surgeons, Chicago, Palmer House, Jan. 24-29. Dr. Harold B. Boyd, 869 Madison Ave., Memphis, Tenn., Secretary.

American Society for Surgery of the Hand, Chicago, Jan. 23-24. Dr. Joseph H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

Southeastern Allergy Association, Richmond, Va., Jefferson Hotel, Jan. 17-18. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 49, S. C., Secretary.

GOVERNMENT SERVICES

ARMY

NEW COMMISSIONING PROCEDURES

Representatives of all Army general hospitals in the United States attended a two day conference early in December in the Surgeon General's Office on procedures in commissioning medical and dental officers under provisions of Public Laws 365 and 381, enacted by Congress last August. This meeting launched a special procurement campaign which, for the first time, permits original appointment of physicians and dentists in advanced grades up to and including colonel. Simultaneously, the Surgeon General announced establishment of a special procurement branch in the personnel division, whose function will be to expedite handling of all applications. Eligible to apply for commissions in the Regular Army are civilian physicians and dentists without previous military affiliation, as well as members of the Officers' Reserve Corps, National Guard and Army of the United States, whether on active or inactive duty.

With regard to rank, Army circular 51, which is effective December 15, prescribes that grades will ordinarily be determined by the applicant's age and minimum active professional practice (excluding internships), including residencies and post-graduate training as follows (years of active duty as a physician or dentist in the armed forces will be included as professional practice):

Grade	Medical Professional Practice	Dental Professional Practice	Maximum age
First Lieutenant	No years	No years	32 years
Captain	3 years	4 years	37 years
Major	10 years	11 years	42 years
Lieutenant colonel	17 years	18 years	48 years

Appointments in the grade of colonel will be reserved for those applicants who possess outstanding qualifications for special positions established by the Surgeon General as requirements necessitate. Information as to provisions applicable to medical and dental officers now on active duty is obtainable from their commands, the Adjutant General's Office, the procurement branch in the Surgeon General's Office and Army general hospitals, where screening centers have been established. Civilians and officers on inactive duty will apply direct to the Adjutant General, Attention: AGSO-R, Washington 25, D. C.

SHORTAGE OF SOCIAL WORKERS

Professionally qualified social workers who hold an officer's commission in the Organized Reserve Corps may make application for recall to active duty for an indefinite period, according to an announcement by Major Gen. Raymond W. Bliss, the Surgeon General. These officers will be recalled in the grade held prior to separation from the service, and they will be assigned to the neuropsychiatric services in general hospitals, training centers and disciplinary barracks. There is a critical shortage of trained officers social workers now on duty. Forms for submitting application may be obtained from local Reserve Officer Corps units or directly from the office of the Surgeon General, Department of the Army Washington, D. C.

NEUROPSYCHIATRIC SURVEY IN EUROPEAN COMMAND

The system used by U. S. Army hospitals for neuropsychiatric cases in Germany and Austria was recently surveyed by Dr. Franklin G. Ebaugh, professor of psychiatry, University of Denver, and Dr. William H. Everts, Philadelphia, both formerly Army neuropsychiatrists and now consultants to the Surgeon General. The tour included hospitals in Nuremberg, Wiesbaden, Munich and Vienna. They also investigated German and Austrian practice and teaching in neuropsychiatry.

CHEMICAL PLANT LEASED TO PENICILLIN MANUFACTURER.

The Department of the Army has leased for a period of twenty years the Vigo Plant at Terre Haute, Ind., to Chas. Pfizer & Company of Brooklyn for the production of antibiotics and other drugs and chemicals for civilian use. The Vigo Plant, built during the war, was formerly operated under the jurisdiction of the Army Chemical Corps. Leasing the plant for the manufacture of penicillin, streptomycin, antibiotics and other biologicals and chemicals for civilian use will effect extensive savings for the government in maintenance costs as well as the revenue received in rental.

NAVY

CONFERENCE ON GRADUATE TRAINING

The Reserve Consultants Board to the Bureau of Medicine and Surgery will meet at the National Naval Medical Center, Bethesda, Md., January 9. The board will discuss matters pertaining to the Graduate Medical Training Program and the American Specialty Board requirements for naval medical officers. Sixteen civilian doctors will be present: Lowell Coggeshall, University of Chicago (tropical medicine); Donald Hale, Cleveland Clinic (anesthesia); J. Roscoe Miller, Chicago (internal medicine); Winchell M. Craig, Rochester, Minn. (neurologic surgery); Paul Titus, Pittsburgh (obstetrics and gynecology); Joseph S. Barr, Boston (orthopedics); E. N. Broyles, Baltimore (otolaryngology); George M. Lyon, Huntington, W. Va. (pediatrics); Paul W. Greeley, Chicago (plastic surgery); F. J. Braceland, Rochester, Minn. (psychiatry and neurology); Wendell G. Scott, St. Louis (radiology); Howard K. Gray, Rochester, Minn. (surgery); Clark M. Johnson, University of California (urology); M. G. Westmoreland, Chicago, College of American Pathologists (medical education); Alphonse McMahon, St. Louis (internal medicine), and A. C. Ivy, University of Illinois, Chicago, representing the preclinical sciences.

GRADUATE AVIATION MEDICAL EXAMINERS

Twelve naval medical officers received diplomas as aviation medical examiners at graduation exercises at the Naval Air Station, Pensacola, Fla., Dec. 5, 1947. The graduates completed three months of the Flight Surgeon's Course in classroom, laboratory and field work at the Naval School of Aviation Medicine. Capt. William Sinton, U. S. Navy, Commanding Officer of the Naval Air Station, gave the commencement address.

The naval medical officers graduated as aviation medical examiners were: Comd. Ross B. Lautzenheiser (MCR), U. S. N. R.; Lieuts. (jg) (MCR) Nathaniel M. Cohen, U. S. N. R.; Charles H. Crane, U. S. N. R.; Frederick P. Dale, U. S. N. R.; Richard E. Lieurance, U. S. N. R.; James W. Lynn Jr., U. S. N. R.; Ramon A. Mouton (MC), U. S. N.; Lieuts. (jg) (MCR) Doak Mudd, U. S. N. R.; Harold M. Peacock, U. S. N. R.; George M. Rhodes, U. S. N. R.; Leon J. Tune, U. S. N. R., and Robert H. Whittlesey, U. S. N. R.

The next class for flight surgeons and aviation medical examiners begins on Jan. 5, 1948.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CONNECTICUT

Personal.—Dr. Parker M. Cort, Hartford, on November 7 retired as associate medical director of Aetna Life Insurance Company. He had been with the company since 1926.

Smallpox Vaccination Guaranteed.—According to a document recently uncovered by the Connecticut Historical Society, in May 1805 Dr. Vine Utley wrote the following receipt on the payment for services to the entire family of Capt. William Brainard 2d of Westchester, whose family Dr. Utley had vaccinated against smallpox: "Received of Capt. William Brainard 2d, \$13 by note being in full for vaccinating himself, wife and children . . . and promise that if any of them shall take the smallpox at any time hereafter to pay all necessary expense in carrying them through said disease." All the family lived to a ripe age.

State Society Aids Graduate Program.—A broad program of postgraduate education is planned by the Yale University School of Medicine, New Haven, under a new committee consisting of Dr. Herbert Thoms, professor of obstetrics and gynecology, chairman; Dr. Milton C. Winternitz, Anthony N. Brady professor of pathology; William U. Gardner, Ph.D., professor and chairman of the department of anatomy; Dr. David M. Kydd, associate professor of medicine, and Dr. Creighton Barker, executive secretary of the Connecticut State Medical Society. To further this program the house of delegates of the State Medical Society at their recent semiannual meeting approved a grant of \$10,000 to the medical school for a period of two years.

ILLINOIS

Cancer Diagnostic Clinic in Waukegan.—A state-aided cancer diagnostic clinic has been opened at Victory Memorial Hospital, Waukegan. Clinic sessions are held every Thursday morning at 9 a. m. Dr. John C. McCarter is serving the new clinic as pathologist. This clinic brings to seventeen the number of such centers in operation throughout the state. Any resident of Illinois who has symptoms suggestive of cancer may arrange through his attending physician for admission to any one of the diagnostic clinics.

Joint Fund to Help Train Country Doctors.—The Illinois State Medical Society and the Illinois Agricultural Association have set up a medical training program based on a fund to be established by a contribution of \$50,000 each. From this fund loans will be made to accepted medical students at the rate of \$1,000 a year to a maximum of \$5,000 per student. The program will be administered by a "Farmer and Doctor Loan Fund Board" composed of three representatives of each organization.

A student seeking a loan under the plan must (1) agree to return to a town of less than 5,000 population in his home county for general practice; (2) apply from his native county and be unable to finance his training but free of debt; (3) be recommended in writing by both the local medical society and farm bureau; (4) pass the aptitude tests of the University of Illinois Medical School or the equivalent; (5) take his training in an approved medical school; (6) repay money advanced from the fund in five annual payments at 2 per cent interest after he begins to practice; take out a ten year term life insurance policy for \$5,000 payable to the board, premiums to be paid by the board from money lent the student during his training and by the beneficiary thereafter until the loan is repaid in full, and (7) repay the loan and accrued interest at once if he abandons his medical training.

Four new students will be accepted each school year beginning in the fall of 1948.

Chicago

University Appointment.—Dr. Jules H. Last, recently released from army duty with the rank of captain, has been appointed an assistant professor in the department of pharmacology and toxicology at the University of Illinois. Dr. Last conducted nutritional studies in the service. He received his doctor of philosophy degree at the University of Chicago, 1941, and his medical degree at the University of Illinois, 1944.

Lecture on Cirrhosis of the Liver.—The North Side Branch of the Chicago Medical Society will hear Dr. Russell S. Boles, University of Pennsylvania School of Medicine, Philadelphia, on "Modern Conception of Cirrhosis of the Liver" at its regular meeting at 8 p. m. January 8 in the Drake Hotel. The meeting will be preceded by a fellowship gathering at 5:30 and dinner at 6:30. Reservations should be made by calling Central 7764.

Dr. Cowdry to Give the Fenger Lecture.—The twelfth Christian Fenger Lecture of the Institute of Medicine of Chicago and the Chicago Pathological Society will be delivered at the Palmer House on Monday evening, January 12, by Edmund V. Cowdry, Ph.D., professor of anatomy, Washington University School of Medicine, St. Louis, and director of research, Barnard Free Skin and Cancer Hospital, St. Louis, on "Expectations in Cancer Research."

Grants for Cancer Research.—Two gifts of \$100,000 each have been made to the University of Chicago School of Medicine by Mr. and Mrs. Charles H. Worcester, Chicago. The gifts are to be used to provide facilities for cancer research, for which the Cancer Research Foundation of the university is presently conducting a campaign for \$2,570,000. The gifts of Mr. and Mrs. Worcester are the second provision they have made for the study of cancer at the University of Chicago. In September 1944 they gave \$400,000 to establish the Charles H. and Mary F. S. Worcester Fund for cancer research at the university.

KANSAS

Research in Cardiac Physiology.—The Kansas State Emergency Fund Commission has made a grant of \$10,000 to the University of Kansas School of Medicine, for research in cardiac physiology. The grant was made to: Drs. Paul W. Schafer, department of surgery; Mahlon H. Delp, department of medicine, and Paul H. Lorhan, department of anesthesiology.

Appoint Director of Mental Hygiene Division.—The Kansas State Board of Health has appointed Dr. Edgar W. Warren II, since January 1945 a fellow of the Menninger Foundation, as director of the newly established Mental Hygiene Division. Dr. Warren was graduated at Yale University School of Medicine, New Haven, Conn., in 1936 and was a member of Yale University department of student health from 1938 to 1941, when he joined the Louisiana State Department of Health; from 1943 to 1945 he was on the staff of the Ochsner Clinic, New Orleans.

MAINE

Biologic Research Facilities.—At Salsbury Cove the Mount Desert Island Biological Laboratory, which is celebrating its fiftieth birthday this summer, offers its facilities for research and study in biology between June 15 and Sept. 15, 1948. A newly equipped laboratory for the study of problems in tissue growth is under the supervision of Philip R. White, Ph.D. Persons desiring to work with Dr. White should first address their inquiries to him at the Institute for Cancer Research, Girard and Corinthian Avenues, Philadelphia 30.

Grant to Rebuild Laboratory at Bar Harbor.—The National Advisory Cancer Council of the U. S. Public Health Service in December awarded a grant of \$250,000 to aid in rebuilding the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, which was destroyed by forest fire some time ago. This was the first substantial construction grant ever given by the National Advisory Cancer Council and was contingent on the securing of further funds from other sources to complete the building, which will cost an estimated \$650,000. Previously the Damon Runyan Memorial Fund for cancer research donated \$50,000. Clarence C. Little, Sc.D., has been director of the laboratory since 1929.

MINNESOTA

Society News.—The Ramsey County Medical Society at a meeting December 22 was addressed by Dr. Charles E. Rea, St. Paul, on "Is Hormonal Therapy of Value in Treatment of Undescended Testicle?" and Dr. John P. Medelman, St. Paul, on "Pulmonary Fibrosis."

Drug Store Depots.—The Bureau of Health of the city of St. Paul has selected fourteen drug stores to serve as depots where specimens of sputum and gastric contents may be left by physicians and picked up by the Bureau of Public Health for examination and report.

Blood Pressure Study on Business Men.—Three hundred St. Paul and Minneapolis businessmen between the ages of 45 and 54 are serving as test subjects in a ten year study of high blood pressure. The study, which is under way at the University of Minnesota, will attempt to determine whether habits of diet and exercise affect diseases of the heart and blood vessels.

NEW YORK

State to Operate Sanatorium.—According to newspaper reports the state has agreed to take over the county-operated Onondaga Sanatorium for the tuberculous next April 1 as the first step toward integration of tuberculosis treatment in the state's plan to eradicate the disease within twenty years through free hospitalization. The two hundred and fifty bed sanatorium will serve as a research and training center and will work closely with Syracuse University College of Medicine.

Hearing Aid for Children.—The New York League for the Hard of Hearing has begun a project in fitting hearing aids and in giving acoustic training for young children through cooperation of the Greater New York Fund, the Hecksher Foundation for Children and hearing aid manufacturers and dealers. The project includes preliminary audiometric study, hearing aid trials, acoustic training and follow-up at home and at school. About 100 children of the Greater New York area between 4 and 12 years of age will be admitted for fitting on recommendations from an otologist. Two lessons a week will be given at the league, plus home work supervised by parents and training at school. The league still needs funds to pay for additional hearing aids for indigent children, to secure a consulting psychologist and to pay clerical help.

Postgraduate Lectures.—The Medical Society of the State of New York in cooperation with the New York State Department of Health has arranged postgraduate lectures as follows: On January 15 the Geneva Academy of Medicine will hear Dr. Foster Kennedy, New York, speak on "Nervous Conditions Associated with Allergy," and on February 19 Dr. Wesley T. Pommerehne, Rochester, N. Y., on "Dysmenorrhea." Lectures will be held at the Seneca Hotel, Geneva, at 8:30 p. m.

Clinton County Medical Society will hear three lectures at 8:00 p. m. in the Champlain Valley Hospital Nurses Home, Plattsburg: January 15, Dr. Frederick T. Schantz, Buffalo, "Treatment of Persistent or Recurrent Dyspnea"; February 19, Dr. George H. Marcy, Buffalo, "Treatment of Low Back Pain," and March 18, Dr. Abraham H. Aaron, Buffalo, "Treatment of Epigastric Distress Following Meals."

Four lectures have been arranged for the Richmond County Medical Society in the auditorium of the U. S. Marine Hospital, Stapleton, Staten Island, at 4:30 p. m.: January 9, Dr. Russell L. Cecil, New York, "Treatment of Chronic Arthritis"; January 16, Dr. Carl T. Javert, New York, "Clinical and Obstetric Significance of the Rh Factor," and January 30, Dr. Thomas H. McGavack, New York, "Treatment of Hyperthyroidism."

New York City

Personal.—Dr. Charles E. Lyght, for five years director of health education, National Tuberculosis Association, on December 1 joined the staff of the Medical Division of Merck & Co., Inc., Rahway, N. J.

Harvey Lecture.—John F. Enders, Ph.D., associate professor of bacteriology and immunology, Harvard Medical School, Boston, and chief of the research division of infectious diseases, Children's Hospital, Boston, delivered the third Harvey Lecture of the current series at the New York Academy of Medicine December 18 on "Virus as Antigen With Special Reference to Mumps."

Annual President's Dinner.—The Medical Society of the County of Kings and the Academy of Medicine of Brooklyn will hold their fourth annual President's Dinner January 29 at the Columbus Club, 1 Prospect Park West. Dr. Louis H. Bauer, president of the Medical Society of the State of New York, will present the President's Medal and Scroll to Dr. Abraham Koplowitz.

Symposium on Diagnosis of Virus and Rickettsial Infections.—The New York Academy of Medicine, under the auspices of the section on microbiology, will present a symposium on the Diagnosis of Virus and Rickettsial Infections Thursday evening, January 29, and Friday afternoon and evening, January 30. Dr. Frank L. Horsfall is chairman of the symposium. Dr. Gregory Schwartzman is chairman of the section and Dr. Harry Most is secretary.

Hospital Establishes Rehabilitation Clinic.—Beth Israel Hospital has established a rehabilitation clinic designed for the treatment of patients disabled by cerebrovascular accidents and allied disorders. The purpose will be to treat and train such persons, the majority of whom would be in the upper age brackets and who also suffer from hardening of the arteries and high blood pressure, to live useful lives within the limits of their disability. The clinic eventually plans to broaden the program to include other types of disability. At present, admission to the new service will be limited to ward and clinic patients.

PENNSYLVANIA

Establish Bone Bank.—A bone bank to provide a constant supply of bone for grafting operations has been established at the George F. Geisinger Memorial Hospital, Danville. The bank was set up on the recommendation of Dr. Leonard F. Bush, head of the hospital's orthopedic department. Bone obtained from operations in which surplus bone is removed is sterilized and kept in a deep freeze unit at 10 F. (—12 C.) until needed. Several successful bone-grafting operations have already been performed with the use of bone from the bank.

WEST VIRGINIA

Dr. Gerhardt Goes to New York.—Dr. Paul R. Gerhardt, Charleston, director of the division of cancer control, state health department, since July 1944, has resigned to become director of the New York State Health Department's division of cancer control, with headquarters in Albany. Dr. Gerhardt, a graduate of the University of Wisconsin Medical School, Madison, was engaged in general practice in Boone County for three years before accepting appointment to the state's Bureau of Medical Service in 1942.

Mental Hospital Recommended.—The Mental Hygiene Committee of the West Virginia State Medical Association has recommended to the council that an appropriation be sought at the session of the legislature in 1949 for the construction of a new mental hospital in West Virginia and of a separate hospital for the feeble-minded and the epileptic. The committee plans to organize a state mental hygiene society, and the chairman, Dr. Oscar B. Biern, Huntington, has been directed to arrange for an organization meeting to be attended by representatives of the association's twenty-nine component societies. The meeting will be held in Charleston early in the spring.

Premature Baby Nursery.—A nursery at the Herbert Thomas Memorial Hospital in South Charleston, established under the auspices of the state health department, will open in January to offer services to doctors in the care of premature babies in Kanawha County. Although no charge will be made, parents will be permitted to pay a part or all of the expenses if they so desire, refund being made to the division of maternal and child health for the expenses incurred. The personnel will consist of four local pediatricians and three nurses. Special training was given the nurses by the state health department. A room was donated by the hospital. A special ambulance unit will be available, and the Charleston Fire Department will provide the driver.

The project was made possible through an outright grant from the Children's Bureau of the Federal Security Agency. West Virginia is one of four states providing this type of service. The nursery is patterned after the Chicago program.

WISCONSIN

Narcotic Violation.—Dr. Jerome F. McDowell, formerly of 1024 Main Street, Racine, now in Batavia, N. Y., pleaded guilty to an indictment charging violation of the Federal Narcotic Law and recently was sentenced to one year and one day. The sentence was suspended, and he was placed on probation for a period of three years.

New State Board Members.—Dr. John W. Prentice, Ashland, has been appointed a member of the Wisconsin State Board of Medical Examiners to succeed Dr. Raymond Arveson, Frederic, for a term ending July 1, 1951. Dr. Alvin G. Koehler, Oshkosh, has been appointed by the governor to the State Board of Medical Examiners, succeeding the late Dr. Jessie P. Allen of Beloit, for a term also expiring July 1, 1951.

PUERTO RICO

Annual Meeting of Puerto Rico Medical Association.—The annual meeting of the Puerto Rico Medical Association was held December 10-12 in San Juan with a large number of American and foreign physicians participating. New directors elected for 1948 are Dr. Manuel A. Astor, president; Dr. Juan Basora Defillo, secretary, and Dr. Manuel Guzmán Rodríguez, speaker of the house of delegates.

Delegates voted to take measures to prevent nonspecialists from advertising their services as specialists. Likewise, a closer supervision will be observed on newspaper advertising covering medical services.

In recognition of over fifty years of continuous service in the medical profession of the island, the meeting was held in honor of Drs. Manuel Quevedo Báez, founder of the association, J. A. Franco Soto, Isaac González Martínez and Vicente Roure. A diploma was delivered to each of these members by Dr. Victor Gutiérrez Ortiz.

GENERAL

International Bulletin Discontinued.—The *Monthly Bulletin* of the International Office of Public Hygiene, published uninterruptedly since 1909, has been discontinued since the International Office of Public Hygiene is to be taken over by the World Health Organization or its Interim Commission. The last number was October-November-December, 1946.

Medicolegal Congress.—A Medicolegal Congress will be held at the Sheraton-Coronado Hotel, St. Louis, January 19-21 under the auspices of the Board of Police Commissioners of St. Louis. Subjects under discussion include the psychopathic personality as a social and psychiatric problem, blood grouping, use of blood test in disputed parentage, the barbiturate problem and subdural hematoma.

Midwest Radiologic Conference.—The annual Midwest Radiologic Conference will be held at the Hotel Schroeder, Milwaukee, February 6-7. The dinner speaker on Friday evening, February 6, will be Dr. Robert R. Newell, Stanford University School of Medicine, San Francisco. Inquiries may be addressed to Dr. Abraham Melamed, Secretary, Milwaukee Roentgen Ray Society, 425 East Wisconsin Avenue, Milwaukee 2.

Oral Pathologists to Meet.—The American Academy of Oral Pathology will hold its second annual meeting at the Hotel Stevens, Chicago, Sunday, February 8. Among the speakers will be: Dr. Carl W. Waldron, Minneapolis; B. O. A. Thomas, D.D.S., Seattle; Edward Stafne, D.D.S., Rochester, Minn.; Hamilton B. G. Robinson, D.D.S., Columbus, Ohio; Barnett Levy, D.D.S., St. Louis; Irving Glickman, D.D.S., Boston; Henry Goldman, D.D.S., Boston; Lester R. Cahn, D.D.S., New York; Herman Becks, D.D.S., San Francisco, and Dr. Myron Aisenberg, Baltimore.

Conference of Professors of Preventive Medicine.—At the recent annual meeting of the Conference of Professors of Preventive Medicine, Dr. Henry E. Meleney, Hermann M. Biggs professor of preventive medicine and chairman of the department at the New York University College of Medicine, New York, was elected president for the next year. A mimeographed directory of persons engaged in teaching preventive medicine and public health in the eighty-eight medical schools in the United States and Canada was issued at this meeting. Copies may be obtained by writing to Dr. Thomas D. Dublin, Secretary, 248 Baltic Street, Brooklyn 2.

American College of Surgeons Meetings.—Six sectional meetings of the American College of Surgeons have been announced. Each meeting will last two days and will include conferences for hospital personnel as well as sessions for the members of the medical profession, and a symposium on cancer will follow a dinner meeting on the first evening. Panel discussions led by authorities in each field of surgery will be held each morning and afternoon. The list of meetings is as follows: Toledo, January 20-21, Commodore Perry Hotel; Atlanta, January 26-27, Ansley Hotel; Oklahoma City, January 30-31, Oklahoma Biltmore Hotel; Denver, March 1-2, Cosmopolitan Hotel; Minneapolis, March 15-16, Hotel Nicolet, and Halifax, May 17-18, the Nova Scotian.

Winners of Writing Awards.—For writing the year's best newspaper and magazine science series, George A. Keaney of the *New York World-Telegram* and Steven M. Spencer, associate editor of the *Saturday Evening Post*, on November 28 were named winners of \$1,000 prizes in the annual competition held by the American Association for the Advancement of Science for the George Westinghouse Science Writing Awards. Mr. Keaney received his award for a series of five articles printed last March 18 to 22 dealing with research in blood transfusions, blood substitutions to rescue infants doomed by Rh factor incompatibility, validity of paternity blood tests and proteins in blood. Mr. Spencer's prize-winning article, "New Hope for the Anemic," which appeared in the December 14, 1946, *Saturday Evening Post*, described the painstaking discovery and subsequent success of folic acid in the treatment of anemia.

International College of Surgeons.—The sixth International Assembly of the International College of Surgeons will be held in Rome, Italy, May 16-23, under the presidency of Professors Raffaele Bastianelli and Raffaele Paolucci of Rome and Mario Dogliotti of Turin. Scientific meetings and exhibits and visits to the universities of Turin and Milan have been arranged, together with tours to other medical centers. Information may be obtained from Dr. Max Thorek, General Secretary, 850 West Irving Park Road, Chicago 13. For travel information, address the All Nations Travel Bureau, 38 South Dearborn Street, Chicago. Those desiring to present scientific papers should address Dr. Karl Meyer, Cook County Hospital, Chicago; Dr. Henry W. Meyerding, Mayo Foundation, Roches-

ter, Minn., or Dr. Herbert Acuff, Acuff Clinic, 514 West Church Street, Knoxville, Tenn. Those from Canada should direct inquiries to Dr. Lyon Appleby, 925 West Georgia Street, Vancouver, B. C.

Annual Dinner of Vitamin Foundation.—More than one hundred and fifty notables in the field of medicine, public health, science and pharmacy were welcomed by Dr. Theodore G. Klumpp, New York, chairman of the board of governors, to the second annual dinner of the National Vitamin Foundation, Waldorf-Astoria Hotel, New York, December 12. Dr. Klumpp called for increased financial support of the foundation's research activities and the creation of additional projects in nutrition research. Mr. Basil O'Connor, national chairman of the American Red Cross, concluding his address said: "We must not lose sight of the primary objective of nutrition research—a complete understanding of the requirements of man to the end that his health and well-being may be materially improved. Buoyant health, a more productive life, sturdier children with a greater capacity for learning and achieving the worth while things of life, these are the promises held out by nutrition research pointing to a way of life in which man may more nearly become master of his own destiny." Dr. Robert S. Goodhart, New York, scientific director of the foundation, outlined vitamin research activities sponsored in hospitals and universities through the foundation's grants-in-aid, stating that during the past year more than \$50,000 had been voted for these continuing studies.

CANADA

Society News.—At a regular meeting of the Montreal Medico-Chirurgical Society January 9 at the society rooms, Montreal, Dr. Robert R. Linton, Brookline, Mass., will deliver an address entitled "Venous Thrombosis and Pulmonary Embolism."

Health Week February 1-7.—The Health League of Canada has designated February 1-7 as the country's fourth annual National Health Week. All organizations have been asked to assist in organizing local Health Week committees and in arranging for special meetings at which their own organization would feature health lectures and show appropriate films.

CORRECTION

Use of BAL in Lead Poisoning.—In the article by Dr. James G. Telfer in *THE JOURNAL*, Nov. 29, 1947, in the twenty-sixth line, second column, page 836, the figure 0.150 Gm. should have been 0.150 mg.

Hormone Metabolism in the Target Organs.—In line four of Dr. Arno B. Luckhardt's letter to the Editor in *THE JOURNAL*, Dec. 13, 1947, page 1025, the word "secretion" was a typographic error and should have been "secretin."

Marriages

FRANK PAGE SMITH, Easley, S. C., to Miss Thora Dagny Mykland of West Des Moines, Iowa, Nov. 28, 1947.

WILLIAM ROBERT WOOLNER, New York, to Miss Patricia Nanon Newman of Ridgefield, Conn., Nov. 13, 1947.

BENJAMIN STRAWBRIDGE PERKINS, Conshohocken, Pa., to Miss Helen Dales Walburn in Radnor, Sept. 16, 1947.

JAMES MICHAEL O'LEARY, Altoona, Pa., to Miss Patricia Ann McCann of Johnstown, Pa., Oct. 18, 1947.

ADRIAN BRODEY, Woodmere, L. I., N. Y., to Miss Sylvia Redlich of Mount Vernon, Aug. 3, 1947.

HAROLD L. NOBLE to Dr. ELLENETTA C. BEACHLEY, both of Washington, Pa., in October 1947.

HAROLD MARKS, San Mateo, Calif., to Dr. OLIVE IRENE MOE of Tacoma, Wash., Nov. 7, 1947.

JOHN D. GILLAND JR. to Mrs. Elizabeth Dove Manly, both of Kingstree, S. C., Nov. 11, 1947.

HERBERT K. BLOOM, Everett, Mass., to Miss Berenice Theresa Doherty of Boston, Nov. 1, 1947.

AUGUST F. DARO, Chicago, to Mrs. Maryann Major at Highland Park, Ill., Nov. 29, 1947.

ANTON G. KOVARY JR., Flushing, N. Y., to Miss Rose Wiesel of Maspeth, Oct. 25, 1947.

DICK M. NISBET, Eaton, Ohio, to Miss Charlotte Ann Monroe in Howell, Mich., recently.

Deaths

James Archer O'Reilly * director of the department of orthopedic surgery at St. Louis University School of Medicine, died in St. Luke's Hospital in St. Louis, Dec. 5, 1947, aged 68. Dr. O'Reilly was born in St. Louis Sept. 24, 1879. He received his A.B. in 1902 and his M.D. from Harvard University, Boston, in 1906. He served an internship at the Carney Hospital, Boston, and later became assistant orthopedist at the Children's Hospital and the Massachusetts General Hospital. From 1907 to 1910 he was instructor in orthopedic surgery at St. Louis University School of Medicine, then became associate professor of clinical orthopedic surgery at Washington University School of Medicine. During World War I he was orthopedic adviser to draft boards and served again in that capacity during World War II.

In 1933 he returned to St. Louis University as associate professor of orthopedic surgery. He had long been active in the work of the American Medical Association, serving the Section on Orthopedic Surgery as secretary from 1922 to 1926 and as chairman in 1927-1928, and as a member of the House of Delegates from 1931 to 1933 and from 1940 to 1947. He was a specialist certified by the American Board of Orthopedic Surgery. He was largely responsible for the development of the Missouri and St. Louis societies for crippled children, serving as president of the state group from 1930 to 1946, when he became chairman of the board. He had been president of the St. Louis society since its founding. A member of the board of trustees for the National Society for Crippled Children and Adults, Inc., since 1930, he was cited by this group in 1944 for distinguished service to the handicapped. He was a member of the American Orthopedic Association, Clinical Orthopedic Society, American Academy of Orthopedic Surgeons, Southern Medical Association and American Rheumatism Association and a fellow of the American College of Surgeons. In 1919 he was a member of the University City Board of Health. He was a member of the advisory committee of the State Division of Rehabilitation, department of public schools, of the boards of the Occupational Therapy Workshop and St. Louis School for Occupational Therapy, and of the board of regents of the State Cancer Hospital in Columbia. From 1930 to 1935 he headed a Red Cross Committee on Vocational Rehabilitation. Dr. O'Reilly was orthopedist to St. Mary's Group of Hospitals, and to De Paul Hospital. He served as a consultant to the St. Louis City Hospital, St. Mary's Infirmary and St. Luke's Hospital. He was a former president of the St. Louis Little Theatre, an officer of the Volunteer Film Association, the Air Board and the Charities Committee of the Chamber of Commerce. In his writings Dr. O'Reilly consistently stressed the need of total rehabilitation for the handicapped.

Clarence Gaines Toland * Los Angeles; born in Valley Mills, Texas, Aug. 17, 1875; University Medical College of Kansas City, Mo., 1901; clinical professor of surgery at the University of Southern California School of Medicine; at one time affiliated with the Mayo Clinic in Rochester, Minn.; during World War I a major in the medical corps of the U. S. Army, serving for a time as chief of the surgical staff in the Letterman General Hospital in San Francisco; member of the founders group of the American Board of Surgery; member of the House of Delegates of the American Medical Association, 1934-1935; past president of the California Medical Association, Mayo Foundation Alumni Association, Los Angeles Surgical Society, Los Angeles County Medical Association and the Western Surgical Association; member of the Los Angeles Academy of Medicine, California Heart Association, American Surgical Association and the Pacific Coast Surgical Association; fellow of the American College of Surgeons; member of the staffs of St. Vincent's and Good Samaritan hospitals; died Oct. 2, 1947, aged 72, of heart disease.

Clarence Henry Smith * New York; born in Bandon, County of Cork, Eire, Jan. 17, 1875; University and Bellevue Hospital Medical College, New York, 1899; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology, American Laryngological, Rhinological and Otolological Society and the American Otolological Society, Inc.; fellow of the American College of Surgeons; served on the faculty of the New York Post-Graduate Medical School and Hospital; formerly a vice president of the New York Otolological Society and a founder of the Bronx Otolological Society; secretary and director of the Physicians Mutual Aid Association for many years; affiliated with the Union, Bronx, Mother Cabrini, St. Elizabeth's, Manhattan Eye, Ear, Nose and Throat and Morrisania City hospitals and the Bronx Eye and Ear Infirmary; died Oct. 6, 1947, aged 72, of carcinoma.

Laurence Gibbons Alexander, Carrsville, Ky.; University of Nashville (Tenn.) Medical Department, 1904; member of the American Medical Association; past president of the Livingston County Medical Society; died Sept. 21, 1947, aged 66, of myocarditis and hypertension.

Jessie Petrie Allen * Beloit, Wis.; the Hahnemann Medical College and Hospital, Chicago, 1904; served on the state board of medical examiners; on the staff of Beloit Municipal Hospital; died Oct. 12, 1947, aged 69, of coronary occlusion.

William J. Anderson, Meridian, Miss.; University of Tennessee Medical Department, Nashville, 1890; member of the American Medical Association; affiliated with the Anderson Infirmary, where he died Oct. 7, 1947, aged 83, of coronary occlusion.

Louis Arkin, Boston; Harvard Medical School, Boston, 1904; member of the American Medical Association and the New England Otolological and Laryngological Society; served as associate professor of otolaryngology at Tufts College Medical School; affiliated with Beth Israel and Norwood hospitals and the Boston Dispensary; died Oct. 1, 1947, aged 70, of aneurysm of the aorta.

Karl George Avery, Powell, Wyo.; State University of Iowa College of Medicine, Iowa City, 1938; member of the American Medical Association; interned at Salt Lake County General Hospital in Salt Lake City; past president of the Northwestern Wyoming Medical Society; member of the board of directors of the Powell Junior Chamber of Commerce; formerly on the staff of the Worland (Wyo.) Hospital; accidentally drowned recently, aged 32, in Yellowstone Lake in Yellowstone National Park.

Lynn Staley Beals, Captiva, Fla.; Harvard Medical School, Boston, 1904; at one time practiced in Buffalo, where he served on the staff of Lafayette General Hospital; died in the Edward J. Barber Hospital, Lyons, Oct. 1, 1947, aged 70, of cerebral hemorrhage.

Joseph Perley Bodge, South Casco, Maine; Medical School of Maine, Portland, 1899; found dead Oct. 29, 1947, aged 74, of coronary occlusion.

Judson Powell Boulware * Bloomington, Ind.; University of Pennsylvania School of Medicine, Philadelphia, 1916; fellow of the American College of Surgeons; on the staff of Bloomington Hospital; died Oct. 1, 1947, aged 57, of cirrhosis of the liver.

Joseph C. Clawson * Richmond, Ind.; Illinois Medical College, Chicago, 1905; examiner for the county Selective Service Board during World War II; on the staff of Reid Memorial Hospital, where he taught in the school of nursing; died in St. Joseph's Hospital, Tampa, Fla., Oct. 7, 1947, aged 71, of carcinoma.

Howard Dennis Collins, Millbrook, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1893; served during World War I; for many years on the staffs of the City and Knickerbocker hospitals in New York; fellow of the American College of Surgeons; died Oct. 8, 1947, aged 78, of carcinoma.

Clarence Bernard Donges, Camden, N. J.; Jefferson Medical College of Philadelphia, 1891; member of the American Medical Association; died in Cooper Hospital Oct. 6, 1947, aged 78, of coronary thrombosis.

Paul Sarsfield Dougherty, Ojai, Calif.; Tulane University of Louisiana School of Medicine, New Orleans, 1925; at one time on the staff of Good Samaritan Hospital in Los Angeles; died in Fort Worth, Texas, Oct. 11, 1947, aged 48, of arteriosclerotic heart disease.

Frank Sylvester Downey, Sidney, Ohio; University of Cincinnati College of Medicine, 1927; served during World War II; died in the Miami Valley Hospital in Dayton, Oct. 8, 1947, aged 45, of myasthenia gravis.

George John Enders, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1903; served on the department of public health; died in the Hahnemann Hospital Oct. 5, 1947, aged 69, of cerebral anoxia and pulmonary edema.

Israel Feigenoff, Paterson, N. J.; Long Island College Hospital, Brooklyn, 1905; member of the American Medical Association; school physician; on the staff of Barnert Memorial Hospital; died Oct. 4, 1947, aged 69, of coronary thrombosis.

William Anthony Ferraro, Pittsburgh; Marquette University School of Medicine, Milwaukee, 1940; served an internship and residency at the Pittsburgh Hospital; an officer in the medical corps of the U. S. Naval Reserve during World War II; fellow resident at the Memorial Hospital, where he died Oct. 14, 1947, aged 33, of carcinoma of the pancreas.

Joseph Marshall Gallemore, Kansas City, Mo.; Barnes Medical College, St. Louis, 1898 and 1905; died in the General Hospital Oct. 8, 1947, aged 71, of coronary artery disease with myocardial infarction.

Joseph William Gamble @ Albert Lea, Minn.; University of Minnesota Medical School, Minneapolis, 1918; died recently, aged 55.

Arthur E. Genter, Sheboygan, Wis.; Northwestern University Medical School, Chicago, 1894; fellow of the American College of Surgeons; died in Bellin Memorial Hospital in Green Bay, Oct. 5, 1947, aged 77, of cerebral hemorrhage.

Henry A. Hutchinson @ Dixmont, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1878; an Affiliate Fellow of the American Medical Association; member of the American Psychiatric Association; for many years medical superintendent of the Dixmont Hospital, where he died Oct. 5, 1947, aged 91, of chronic myocarditis.

George Delmont Jeffers @ Parkersburg, W. Va.; born in Coolville, Ohio, Aug. 10, 1865; University of Louisville (Ky.) Medical Department, 1889; an Affiliate Fellow of the American Medical Association; past president and formerly member of the council of the West Virginia State Medical Association; served as president of the Academy of Medicine of Parkersburg; president of the medical advisory board for district number 2 during World War I; died in a local hospital Oct. 4, 1947, aged 82, of heart disease.

Albert Joseph Keenan @ Newburgh, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1902; served as clinical professor of otolaryngology at Long Island College Hospital; formerly on the staffs of St. Peter's and St. Mary's hospitals in Brooklyn; died Oct. 3, 1947, aged 69, of bronchopneumonia and sarcoma.

Edwin John Kepler @ Rochester, Minn.; University of Minnesota Medical School, Minneapolis, 1924; associate professor of medicine at the University of Minnesota Graduate School; specialist certified by the American Board of Internal Medicine; member of the Central Society for Clinical Research and the Association for the Study of Internal Secretions; fellow of the American College of Physicians; senior consultant of the section on metabolism of the Mayo Clinic; died Oct. 19, 1947, aged 53, of coronary thrombosis.

Payton Ligon, Henderson, Ky.; Kentucky School of Medicine, Louisville, 1886; member of the American Medical Association; served as county health officer and city and county jail physician; died in Henderson Hospital Oct. 21, 1947, aged 85, of uremia and nephritis.

Charles Sumner Lombard, Redlands, Calif.; Rush Medical College, Chicago, 1881; died recently, aged 94, of senility.

Joseph Douglas McCue, Washington, D. C.; College of Physicians and Surgeons, Boston, 1910; served on the staff of Georgetown Hospital; died in St. Elizabeth Hospital Oct. 20, 1947, aged 66, of purulent bronchitis.

Robert James Northridge, West Upton, Mass.; College of Physicians and Surgeons, Boston, 1912; died Sept. 27, 1947, aged 61, of coronary occlusion.

William Pick @ New York; Deutsche Universität Medizinische Fakultät, Prague, Czechoslovakia, 1919; specialist certified by the American Board of Dermatology and Syphilology; on the staff of the New York Skin and Cancer Hospital; died in the Kew Gardens (N. Y.) Hospital Sept. 8, 1947, aged 55, of myocarditis and pneumonia.

George Ralph Seikel, Akron, Ohio; St. Louis University School of Medicine, 1925; captain in the medical corps, Army of the United States, during World War II; served on the staffs of the Peoples', St. Thomas, City and Children's hospitals and the Edwin Shaw Sanatorium; died in the Veterans Administration Hospital in Cleveland, Sept. 23, 1947, aged 46, of sarcoma and rupture of spleen.

Samuel Z. Shope, Lehighton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; served as vice president of the Medical Society of the State of Pennsylvania; formerly on the staff of Polyclinic Hospital in Harrisburg; received the honorary degree of doctor of laws from Lebanon Valley College; died in the Allentown (Pa.) Hospital Sept. 18, 1947, aged 75, of uremia and prostatic hypertrophy.

Edgar Kimmel Shumaker @ Los Angeles; Western Pennsylvania Medical College, Pittsburgh, 1902; formerly assistant professor of clinical otology and laryngology at the College of Medical Evangelists; member of the Pacific Coast Otolaryngological Society; died Oct. 3, 1947, aged 68, of subdural hemorrhage.

Furman Robbins Shute, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1899; served during World War I; on the courtesy staff of the Hahnemann Hospital; died Sept. 15, 1947, aged 74, of coronary thrombosis.

Charles Edward Silbernagel, Columbus, Ohio; Cleveland Homeopathic Medical College, 1898; member of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology; affiliated with St. Anthony and Grant hospitals; died Oct. 10, 1947, aged 71, of coronary occlusion.

William Miller Sill, Jamestown, N. Y.; Cornell University Medical College, New York, 1907; member of the American Medical Association; for many years superintendent of public health; on the staff of the Jamestown General Hospital and the Woman's Christian Association Hospital, where he died Sept. 20, 1947, aged 67, of congestive heart failure and arteriosclerosis.

Leo Max Smith, Plymouth, Ind.; Indiana University School of Medicine, Indianapolis, 1944; interned at Methodist Hospital in Gary; died in Parkview Hospital October 9, aged 27, of pneumonia.

Frank H. Southgate @ Fort Thomas, Ky.; Medical College of Ohio, Cincinnati, 1892; served as health officer and as school physician; examiner for the Campbell County Draft Board during World War I; consulting pediatrician at Speer's Memorial Hospital in Dayton; died in Christ Hospital, Cincinnati, Sept. 17, 1947, aged 78, of coronary occlusion and bronchopneumonia.

Lawrence Hefron Stevens, St. Louis; St. Louis University School of Medicine, 1929; member of the American Medical Association; served during World War II; died Sept. 23, 1947, aged 42.

Henry Boardman Stewart, Fountain Inn, S. C.; Atlanta Medical College, 1879; died Sept. 15, 1947, aged 92, of an injury received in a fall.

John Hardin Stewart, Plainview, Texas; Barnes Medical College, St. Louis, 1908; died in Our Saviour's Hospital in Jacksonville, Ill., Sept. 26, 1947, aged 69, of phenobarbital poisoning and chronic myocarditis.

Oliver Morton Stone, Oakland City, Ind.; University of Louisville (Ky.) Medical Department, 1893; died Sept. 19, 1947, aged 80, of endocarditis.

Perry C. Stradley, Glendale, Calif.; American Medical College, St. Louis, 1890; died Sept. 20, 1947, aged 83, of general arteriosclerosis.

Frank Louis Swift @ Dunmore, Pa.; Georgetown University School of Medicine, Washington, D. C., 1915; school physician and director of the Fidelity Deposit and Discount Bank; served on the staffs of St. Joseph's Children's and Maternity Hospital, Scranton State Hospital and Mercy Hospital in Scranton; where he died Sept. 28, 1947, aged 55, of heart disease.

William Martin Sylvis @ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1907; Jefferson Medical College of Philadelphia, 1908; served as professor of anatomy and associate professor of surgery at the Hahnemann Medical College and Hospital of Philadelphia; fellow of the American College of Surgeons; a medical officer in France during World War I; on the staffs of the Abington (Pa.) Memorial Hospital and the Hahnemann Hospital; died Oct. 1, 1947, aged 65, of coronary thrombosis.

Edward F. Taylor, Maysville, Okla.; University of Tennessee Medical Department, Nashville, 1903; past president of the Garvin County Medical Society; died in Oklahoma City Sept. 17, 1947, aged 74, of arteriosclerosis.

Walter Shaffer Taylor, Alliance, Ohio; Ohio Medical University, Columbus, 1900; served on the staff of Alliance City Hospital; died Sept. 27, 1947, aged 72, of pneumonia and chronic hypertension.

Rudolph S. Vitt, St. Louis; St. Louis University School of Medicine, 1904; also a graduate in pharmacy; past president of the state board of health; member of the American Medical Association; died in Missouri Baptist Hospital Sept. 9, 1947, aged 73, of coronary thrombosis.

John Floyd Wikstrom @ Ogden, Utah; University of Nebraska College of Medicine, Omaha, 1925; president of the Weber County Medical Society; affiliated with Thomas D. Dee Memorial and St. Benedicts hospitals; died Sept. 18, 1947, aged 49, of coronary disease.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 22, 1947.

Journal for Paraplegics

The Paraplegic Branch of the British Legion announces the publication of a new quarterly journal, the *Cord*, to be devoted to the interests of paraplegics; it will provide information about appliances and medical treatment and how they are to be obtained. General problems of housing and employment will also be discussed. The present issue of the *Cord* contains an interesting short story. A prize of \$8.50 is offered quarterly for the best short story submitted by a paraplegic reader. The annual subscription is only 50 cents. The journal may be ordered from the editor, Paraplegic Branch of the British Legion, Stoke Mandeville Hospital, Aylesbury, Bucks, England.

Great Increase in Blood Transfusions

Among the emergency measures of the war the government maintained a blood transfusion service, mainly for the treatment of civilians injured in attacks from the air. This service proved so useful that it has been continued in peacetime. The official figures as to donors of blood show a great increase in the practice of blood transfusion. During the quarter ending with June, 27,546 new donors joined the National Blood Transfusion Service—approximately twice as many as in the first quarter of the year—and blood was given by 66,557 donors. The estimated panel strength of donors is now about 350,000. To provide for further increase in the demands for blood and plasma and to insure that donors are not asked to give blood oftener than once in every six months, 168,000 new donors are required in England and Wales.

Conference on Mental Health

The National Association for Mental Health will hold a conference in London January 15 and 16. The subjects of discussion and the speakers include the following: "Readaptation to Life and Work of Persons Who Have Suffered from Nervous or Mental Disorder," Drs. G. R. Hargreaves and Donald Stewart. "The Handling of Difficult Children," Mr. E. M. Bartlett, Ph.D., and Miss Clare Britton. "The Responsibilities of Local Authorities in Relation to Mental Health," Drs. Kenneth Soddy and Doris Odum. "Education for Mental Health as a National and International Responsibility," Brig. A. Torrie, M.B., and Dr. J. R. Rees. Inquiries should be addressed to the Conference Secretary, 39 Queen Anne Street, London, W. 1.

Snoring

Snoring is more a nuisance to others than to its subject, and therefore is not regarded as pathologic; hence it has received little attention. At the section of laryngology of the Royal Society of Medicine, Mr. Ian G. Robin read a short paper on snoring. Noisy respiration during sleep may be produced by various structures in the respiratory tract. He limited snoring to sounds made by vibrations of the soft palate and posterior faucial pillars during sleep. It has been shown that the vibrating part in a snore is the thin edge, or velum, of the posterior pillars of the fauces and that if there was a reservoir of air filling the nasopharynx the velum could not vibrate. The vibrating parts are influenced by the relative position of the tongue and soft palate and by the texture of the velum. Minor degrees of nasal obstruction lead to enough mouth breathing to initiate snoring. These conditions include slight deflection of the septum, collapsed alae nasi and moderate nasal congestion. Pathologic changes in the pharynx may make the soft palate and the velum more liable to be in a suitable state for snoring.

The majority of the cases of snoring in children were cured by removal of adenoids and tonsils. Exceptions were cases of

persistent mouth breathing of functional origin and cases of infective or allergic rhinosinuitis. Snoring seldom persisted into adolescence. The child snorer did not progress into the adult type unless there was persistent nasal obstruction. The largest group of sufferers were elderly men and women, the majority of whom had some functional derangement of the glossopharyngeal structures. Lack of tone seemed to be the fundamental cause.

Treatment of Snoring

Of irrational methods of treatment of snoring the chief was amputation of the uvula; this method used to be popular. It seldom gave much relief, though it might modify the depth and pitch of the snore. Of rational methods, the first was removal or prevention of nasal obstruction, thus stopping mouth breathing. In some instances use of decongestive nasal drops before retiring would allow the patient a peaceful night. In others various nasal operations might be necessary. Diphenhydramine ("benadryl") was useful in some cases. The second method was to change the position of the head, thus preventing the tongue from falling back. Many persons snored only when on their backs, and a roll of cotton sewn into the back of the pajamas might be effective. A third method was to alter the position of the tongue and soft palate, and perhaps also the jaws, by breathing, swallowing and phonetic exercises or by orthodontic splints. The object was to train the central nervous system to regain proper neuromuscular control. The splints altered the shape of the mouth, which might prevent the tongue and fauces falling into the critical position. A fourth method was to keep the mouth closed during sleep by wearing an "andresin" splint (which was well tolerated by children but less so by adults) or by the simple expedient of a strip of adhesive plaster across the corner of the mouth. After a short time this was well tolerated by many patients. An adequate nasal airway was, of course, essential.

PARIS

(From Our Regular Correspondent)

Nov. 14, 1947.

International Union Against Venereal Disease

The International Union Against Venereal Disease held a general meeting at the Albert Fournier Institute October 20-25, 1947 under the presidency of Dr. William Snow (United States). Among the forty-seven delegates, who represented thirty-eight countries, were: for France, Dr. Cavaillon, general secretary, Professor Gougerot, Dr. Sicard de Plauzolles, Professor Levaditi and Dr. Levy-Bing; for the United States of America, besides the president, Miss Jane Pinney, Dr. J. R. Heller and Dr. L. D. Fullerton; for the Soviet Union, Professors Pavlenko, Pavloff, Agrégés Pachkoff and Katchatourjan; for Great Britain, Mrs. Neville Rolfe, vice president, Dr. R. Forgan, Colonel Harison; for the League of Red Cross Societies, Geneva, Switzerland, Dr. S. Hantcheff; for the World Health Organization, Dr. Guthe, and for the UNESCO, Dr. I. Zhukova. On the agenda were four subjects:

1. Collaboration on a national scale with all practitioners: Dr. Dekeyser (Belgium), Colonel Harison (Great Britain) and Dr. Hermans (Netherlands).
2. Treatment of syphilis by penicillin and arsenicals: reporters, Professors Gougerot and Agrégé Robert Degos (France), Dr. Gerda Kjellberg (Sweden), Dr. Walter Clarke (United States).
3. Social organization of the fight against venereal diseases: reporters, Dr. Gerard (Belgium), Dr. Evans (Norway), Professor Grzybowski (Poland).
4. Sex behaviour and venereal diseases: reporter, Mrs. Neville Rolfe (Great Britain), who, among other things, dwelt on the psychic condition of prostitutes.

The Union considers that the antivenereal campaign can be a complete success only if it is pursued at the same time on the preventive, curative and educational planes and if it asks all governments (a) to put into force a complete sanitary, biologic and moral system of education, especially for the young persons

of both sexes; (b) to organize a complete system of antivenereal dispensaries and to insure the collaboration of practitioners (it being understood that patients will be treated free of charge); (c) to pass regulations permitting the detection of infectious persons both from the national and international points of view and to institute compulsory treatment if patients refuse to undertake it voluntarily, and (d) to perfect the knowledge of venereology among practitioners. In another resolution it was voted to require practitioners to collaborate closely with public health services, with the doctor entitled to fees for his preventive as for his curative action. The Union, considering that important results have been obtained by application of the Bruxelles International Agreement concerning the facilities offered to sailors affected with venereal diseases, begs all governments and the World Health Organization to take urgent measures to effect a new, strict application of this agreement and to consider the possibility of expanding it in an International Antivenereal Convention. Action was taken also to convene an International Sanitary Antivenereal Conference of the benevolent antivenereal organizations in which experts would take part. Attention was focused on the use of sulfonamide drugs by the public, thus creating sulfonamide resistance, and the danger to the public health resulting from the administration of penicillin by the oral route was stressed. The Union decided to create three commissions: (1) for the study of questions concerning the Bruxelles agreement and the fight against venereal diseases among emigrants and displaced persons; (2) for liaison with the World Health Organization, and (3) for the study of the psychobiologic problem of prostitution. The next meeting will be held in 1948.

ITALY

(From Our Regular Correspondent)

Oct. 31, 1947.

Cerebral Arteriography

At the Medicosurgical Association in Bologna, Dr. Milletti spoke about differential diagnosis of the various types of endocranial tumors by means of cerebral arteriography.

In 203 cases of cerebral tumors arteriograms made to establish a differential diagnosis of the histologic types revealed data as follows: The arteriograms in 99 of the 203 cases (48.76 per cent) were not of aid in diagnosis of the nature of the tumor. The arteriograms in 104 of the 203 cases (about 51 per cent) were a help in the differential diagnosis.

These arteriograms make it possible to distinguish a benign tumor from a cancerous one. (There was an error of about 4 per cent represented by cases in which the tumor was considered malignant while in reality it was benign.)

It may often be possible to differentiate multiform glioblastoma from sarcoma, especially in those cases of sarcoma in which one can ascertain an outward protrusion of the tumor. It is often impossible to differentiate glioblastoma from oligodendroma: from the arteriographic point of view the behavior of these tumors draws them closer to the cancerous than to the benign tumors.

There is little possibility of differentiating the various forms of benign tumors. Two of 31 cases of astrocytoma (6.45 per cent) demonstrated a peculiar vascularization of the area of the tumor, but these 2 cases were not of a character to allow for differentiation from meningioma. All cases of cholesteatoma were arteriographically negative.

Thus, in practice, the attempts of differential diagnosis by means of arteriography have been given positive results only with regard to two types of endocranial tumors which present themselves most frequently to clinical observation, i. e., the multiform glioblastoma and the meningioma, the former cancerous and the latter benign.

Simultaneous studies of the clinical data which should always be combined with roentgenographic studies by means of contrast medium, and also roentgenographic studies carried out

without contrast medium, may be of additional aid in establishing the differential diagnosis of endocranial tumors.

In conclusion, cerebral arteriography gives the surgeon a diagnostic tool of first importance, and it may be preferred to ventriculography in all cases in which its use is indicated. It may also be used as an important diagnostic adjunct to ventriculography.

Italian Hematologic Association

The Italian Hematologic Association held its eighth National Congress in Pavia. Professor di Guglielmo, director of the Medical Clinic, Naples, acted as president. Among foreign hematologists present were Professor Chevallier of Paris, the Belgian Professor Lambin and the Swiss Professors Moeschlin and Undritz.

The first subject was "Etiopathogenesis and Therapy of Leukemia." The report was divided in four parts. The first part, "Humoral Factors in the Etiopathogenesis of Leukemia," was presented by Drs. Conte Marotta and R. di Guglielmo. Concerning the chemical factors, the report was chiefly on the recent research of the American authors, who have demonstrated substances in the urine of patients with leukemia which are able to provoke the appearance of a histologic leukemic picture in experimental animals. This report was made by Dr. Marotta. There was given a brief outline of the various technics employed by American scientists for the extraction of the leukemogenic principle from the urine, feces and tissues of patients with leukemia.

After that Dr. Guglielmo described the results of American authors in their research either of leukemic patients or on experimental animals. He finally reported his own research, which up to now is not of a degree that affords confirmation of the American reports; considering his limited studies as compared to the scope of those presented by the American authors in research on leukemic patients or on animals, the speaker reserved the right to give a more definite answer when he is able to base conclusions on a larger body of data.

In the second part of the report, "The Results of in Vitro Culture Regarding the Problem of Leukemia" Professor Fieschi presented conclusions derived from his personal research. The third part, "On the Neoplastic Nature of Leukemia," was presented by Professor Storti, who by a careful examination of the cytologic elements, the clinical aspect and experimental studies reached the conclusion that leukemia may be regarded as a neoplastic process of a specific nature.

In the fourth part, "Recent Pathogenic and Therapeutic Discoveries in the Field of Leukemia," Professor Baserga presented statistical data on the incidence of leukemia in relation to seasons, sex, age and family history. He emphasized the prevalence of the disease in men as compared to women, then presented data from his studies which demonstrated the complexity of the problem and the abundance of new points of view. In the field of treatment the speaker developed his concept of the mode of action of various drugs.

A discussion followed. Moeschlin mentioned the importance of treatment with Fowler's arsenical solution, with which in some instances favorable results may be obtained, and with penicillin, particularly when confronted with the risk of oral infection in the acute cases. He also described the favorable results he obtained in some cases with the use of urethane. Lambin disagreed with Baserga by admitting a seasonal influence on the incidence of leukemia; he agreed with him in recognizing the favorable effects of arsenic and penicillin treatment. He prefers urethane treatment to roentgen therapy. Signorelli presented principles, contrary to the concept of the neoplastic nature of leukemia, which were based on the results of his recent studies on the peripheral medullary and splenic cytology. Quattrin considered irreversibility as a differential factor of leukemia from tumors. He did not consider the atypical reports of morphologic changes of the leukemic cell to

be significant; judging from recent studies he admitted the familial character of leukemia.

The second report on "The Genetic Problem of the Rh Factor" was presented by Dr. Morganti, who discussed the Rh factor from the genetic point of view, illustrating his report with graphic records and a large amount of data.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, NOV. 20, 1947.

Study of Blood Transfusions

Drs. Mario P. de Mesquita and Vera Leite Riberio have published the results of an analysis of more than 2,000 blood transfusion records of the blood bank of the Fernandes Figueria Hospital in Rio de Janeiro. During 1945 and 1946 the blood bank furnished blood and plasma for 2,901 transfusions, performed at the hospital or in other institutions, but for only 2,032 of them were complete records available. Of 1,260 blood transfusions with complete records the treatment had been indicated for the following reasons: anemias 749, hemorrhages 190, surgical shock 121, deficiency syndromes 46, dystrophias 53 and other causes 101. The 772 plasma transfusions had been indicated for the following reasons: infectious diseases 106, deficiency syndromes 101, acute dehydration 132, dystrophias 152, cirrhosis of the liver 42, surgical shock 26, malignant tumors 19, hemorrhagic diathesis 20 and other causes 174. Among the 1,260 transfusions 150 reactions occurred (or 11.9 per cent); those 150 cases are divided as follows: chill 63, pyrogen 60, urticaria 14, circulatory shock 9, hemolytic reactions 2 and anomalous reactions 2. In the 772 plasma transfusions only 11 reactions were registered (or 1.4 per cent), divided as follows: pyrogen (chill and fever) 6, urticaria 3 and simple chill 2.

Immunity to Yaws

Since August 1943, the Oswaldo Cruz Institute has had, in the interior of the State of Rio de Janeiro, a rural station for the discovery and treatment of yaws, and several hundred patients have been treated with penicillin. This gave to Dr. F. Nery Guimarães an opportunity to study immunity to yaws, a subject on which few contributions have been made in South America. The study may be summarized as follows:

From the second to the eighth month of the disease there is great resistance to superinfection. Such resistance seems to be independent of the presence of cutaneous lesions, and occurred even in cases with only the initial lesion. From the tenth month to the fourth year of the disease there is a partial immunity which manifests itself in two ways according to the nature of the atypical lesion obtained at the point of inoculation: an attenuated papuloerythematous lesion and a lesion similar to that of the natural infection remained localized at least during the four months that it was observed. This state of partial resistance also seems to be independent of the presence of evident lesions of yaws. The state is not modified by treatment. Patients treated during this stage react to the inoculations in a similar way, although without showing any clinical symptoms and with negative Wassermann reaction.

After the fifth year of the disease superinoculation reveals a greater sensitiveness of the patient. An early papuloerythematous ulcerous lesion, decidedly necrotic and destructive, develops at the point of inoculation; an exacerbation of the patient's lesions occurs at the same time, accompanied by much swelling of the nodes. The lesion obtained in 1 case remained in situ for eighteen months without producing generalized manifestations. Treatment does not modify this state. Patients treated (and improved or totally cured) react in the same way to inoculation during this stage of the disease. Among the 13 patients infected for more than five years ulceronecrotic lesions failed to develop in only 1. He was also the only patient who

never presented gummatous and destructive lesions. On the other hand, 2 patients presenting these lesions but infected for less than three years also did not exhibit ulceronecrotic lesions when superinoculated. These lesions contain treponemes, though only a few.

Since early treatment disturbs the development of immunity, it is advisable from the epidemiologic standpoint to await the end of the secondary period before treating patients in clinics and hospitals, as they may become reinfected. From a prophylactic point of view the primary and secondary lesions must be rapidly eliminated as they are most contagious. In frambesia tropica there is a true immunity and not a simple resistance to superinoculation owing to an active or a latent infection. Thus patients treated and cured clinically and serologically show partial resistance to reinoculation. In this disease immunity takes the form of resistance to superinoculation, or a modification of the initial yaws lesion.

These experiments suggest that the different cutaneous manifestations of yaws are more or less conditioned by the state of immunity of the infected organism. In frambesia tropica the various degrees of immunity are correlated to the age of the infection, but they occur more or less rapidly according to the individual characteristic of the infected organism as well as to the virulence of the treponemes.

Blood Changes in Rats with Benzopyrene Sarcoma

Dr. Carlos A. Salvatore of the Department of Pathology, Paulista Medical School, São Paulo, reported in 1945 his work on the production of large round cell sarcoma in rats after negative transplants of spindle cell sarcomas induced by 1,2-benzopyrene. In some rats the transplant of fragments of the experimental benzopyrene sarcoma produced positive results, but in others the result was negative. Nevertheless, about a year after the absorption of the implanted tumor fragments, the author reported, some of the rats with negative results showed tumors in the lymphatic nodes of the mesentery and of the mediastinum. Those tumors presented a cell picture somewhat similar to that of leukosis, a fact already published by other investigators. Dr. Salvatore found, however, that in his rats the tumor masses were really large round cell sarcomas, as the histologic examination disclosed. Nevertheless, to put aside once more any objection concerning the possibility of the presence of leukemia, Dr. Salvatore decided to repeat his previous experiments, to perform complete hematologic examinations on a new lot of rats under the same conditions. In the first part of the new experiments, now reported, the author attempted a study of the peripheral blood of rats given subcutaneous injections of 1,2-benzopyrene and which presented the induced subcutaneous sarcoma. The blood picture of those rats showed only secondary changes, essentially different from those already reported. Although previously disclosed by others, it is interesting to point out this fact, because it again emphasizes Dr. Salvatore's early work that eliminated leukosis and showed the production of real neoplastic growths. He reports that the intensity of the neutrophilic leukocytosis is correlated with the size of the tumor and therefore with the extension of the central necrosis. He also reports increase of monocytes, oligocytemic anemia and increase of polychromatocytes.

Brief Items

The Brazilian Society of Hygiene held its twelfth annual meeting at Rio de Janeiro October 21-25. The present executive board of the Society includes Drs. Ernani Agricola, J. P. Fontenelle, Carlos Sá, Manoel J. Ferreira and Oswaldo Lopes da Costa.

Dr. J. P. Fontenelle, professor of public health administration at the Curso de Saúde Pública, Instituto Oswaldo Cruz, was elected one of the three vice presidents of the American Public Health Association.

Correspondence

HYDRAULIC LIFT FOR PATIENTS WITH PARTIAL LEG PARALYSIS

To the Editor:—One of the main objectives in muscle reeducation is to afford the patient means of becoming independent of assistance. Capt. Robert Wesselhoeft Jr., U. S. Army Air Corps, who contracted poliomyelitis on the far eastern front, built himself a small stool which he could raise and lower by means of a hand lever operating a screw jack. This was set on large casters which rotated freely in all directions. This enabled him to get off the bed alone onto the stool, which he then lowered by means of the hand lever until his feet had a sufficient purchase on the floor to enable him to propel himself with what remained of his leg muscles. In this way he could transfer himself entirely alone to his wheelchair or any other chair, to the front seat of an automobile and to the toilet seat.



Hydraulic lift for patient with partial paralysis of the legs.

This made him independent of assistance in getting about and thereby greatly helped his morale. Incidentally, it gave his leg muscles purposeful active exercise, thus increasing the strength of those muscles used in propulsion.

Warren E. Collins, Incorporated (555 Huntington Avenue, Boston 15), has modified the original design with a sturdy frame and a hydraulic jack capable of a 34 inch (86 cm.) lift. The stool can be raised by a light to and fro motion of the hand lever and can be lowered at any speed by turning a valve on a separate arm. This device has been in use at Haynes Memorial Hospital for the past few months and has proved to be of distinct value to patients convalescing after poliomyelitis who had sufficient strength in the back, arm and leg muscles. Needless to say, this hydraulic lift serves primarily to make the patient more independent of assistance during that stage of convalescence when the many measures of physical therapy are being employed to restore muscular function. The patient in the illustration is now able to walk by himself with a cane.

CONRAD WESSELHOEFT, M.D., Boston.

SPERM COUNTS, AND STERILITY

To the Editor:—I should like to call your attention to Dr. I. C. Rubin's article published in *THE JOURNAL* (Dec. 28, 1946, page 1047) "Contraception Masking Sterility and Infertility." While most practitioners interested in the field of fertility in men would agree with Dr. Pollack and Dr. E. T. Tyler, who state in their letters to the editor of the *THE JOURNAL*, November 8, page 682, that the normal range of sperms per cubic centimeter of semen is from 60 million to 120 million and that "pregnancies seldom occur when the husband's count is considerably less than 50 million per cubic centimeter, Dr. Rubin, such an authority in fertility and sterility in women, makes in his article the following rather incredible statements: "in an appreciable number of cases the Huhner test showed 10 spermatozoa or less per high power field, despite which pregnancy has taken place," and, "Absence of spermatozoa by the Huhner test, even if found on several occasions, is not always conclusive evidence of male sterility."

If one considers that with each normal ejaculation there are thrown into the female genitals more than 300 million spermatozoa in order that one shall reach the ovum, it is easy to calculate the chances of impregnation when only a few lively ones are ejaculated.

Dr. S. R. Meaker, in his monograph on human sterility, also states that sperm counts in normal cases range from 75 million to 200 million spermatozoa per cubic centimeter of semen.

S. I. MOVITT, M.D., Los Angeles.

TREATMENT OF HYPERTENSION

To the Editor:—The leading editorial in the November 1 issue of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, page 575, mentions the rice diet in the treatment of hypertension and questions the superiority of such a diet over one containing wheat, oats, barley or buckwheat on the basis that there is not adequate scientific evidence to prove its value. This may be the case, but there is evidence that essential hypertension and associated symptoms, such as extrasystoles and paroxysmal tachycardia, can be controlled easily by a somewhat similar diet. This diet was originated for use in the control of allergic symptoms, and it eliminates wheat, milk, egg, potato, pork, tomato, citrus fruits, pineapple and chocolate, the majority of which are basic foods found by many years of experimenting to be the frequent causes of allergic symptoms in a high percentage of patients suffering from allergic diseases.

It was first used in patients with allergic symptoms only, but many patients suffering from headache, perennial vasomotor rhinitis, eczema or gastrointestinal allergy also had what might be called essential hypertension—at least they had maintained blood pressure readings far in excess of normal for their age and weight for years without clinical evidence of cardiac, arterial or renal disease. So many showed such a definite reduction in blood pressure without other therapy that all subsequent patients with essential hypertension were placed on this diet. The results have been so gratifying that this diet seems to me to possess real merit.

The diet is adequate, and a patient cannot be harmed in any way by its use. A few experiments, such as adding each restricted food one at a time for a week, soon indicates which basic foods should be absolutely eliminated if there is a definite increase in the blood pressure. The addition of a food which does not cause an increase in the blood pressure is presumptive evidence of tolerance, and that food is left in the diet. The best possible recommendation for my menu (*J. Missouri M. A.* 38:233-235, July, 1941) is that it works in the treatment of essential hypertension.

LEE PETTIT GAY, M.D.
453 North Taylor Avenue,
St. Louis 8.

Miscellany

PHILOSOPHY OF A MEDICAL SERVICE PLAN

F. L. FEIERABEND, M.D.
Secretary, Surgical Care, Inc.
Kansas City, Mo.

NOTE.—This paper has been condensed from a longer manuscript.—**ED.**
Even until recently many physicians refused to admit the existence of a social problem in medical care. Today, however, most of them recognize and admit that the distribution of medical care is faulty.

Physicians must recognize the moral implication always associated with any social problem. The responsibility for the solution of this social and moral problem must be accepted by the members of the medical profession, and the acceptance must be made by physicians at the local level. Failure to provide the solution is fraught with grave implications, the nature of which has been suggested by two ugly words—regimentation and socialization. Social and moral problems are not solved negatively. The effective solution must be positive. A plan must be developed whereby adequate medical, surgical and hospital care is made available to the people at reasonable cost. Practically, the best plan thus far evolved seems to be one that operates on a budgeted prepayment, nonprofit basis. The technical operation is now well established and is actuarially sound.

Many doctors believe that the American Medical Association should provide the solution of this problem. Such an attitude of local physicians is in keeping with the thinking now exhibited by many citizens. This attitude is best described by the slang expression, "let George do it." Regardless of what the problem may be, many persons say, "What is Congress doing about it? Why don't they pass a law?" Such thinking is false, because in the operation of a democracy it is the responsibility of the citizens that all activity possible must begin at the grass roots level. In recognition of this principle the American Medical Association has not been active in the development of actual operating plans. It has developed Associated Medical Care Plans. This organization will be helpful in promoting, guiding, advising and consulting but will never act in the capacity of actually developing and operating a plan.

To support this thinking, I quote from "Quadragesimo Anno," the great encyclical on the reconstruction of the social order, written in 1931:

It is indeed true, as history clearly proves, that owing to the change in social conditions, much that was formerly done by small bodies can nowadays be accomplished only by a large corporation. Nonetheless, just as it is wrong to withdraw from the individual and to commit to the community at large what private enterprise and industry can accomplish, so too it is an injustice, a grave evil and a disturbance of right order for a large and higher organization to arrogate to itself functions that can be performed efficiently by smaller and lower bodies. This is a fundamental principle of social philosophy, unshaken and unchangeable, and it retains its full truth today. Of its very nature the true aim of all social activity should be to help individual members of the social body, but never to destroy or absorb them.

This is the principle of subsidiarity which is operative in a democracy.

In the United States the people have enjoyed rights and privileges for so long that these are accepted without thought of their source or the obligations incident to the exercise of them. In the American form of government the true source of rights is clearly stated in the Declaration of Independence: "We believe all men to be created equal and endowed by their Creator with certain unalienable rights."

This philosophy is in direct contrast with the philosophy of the materialist Karl Marx, whose "Manifesto" is the Bible of communism. Marx teaches that all rights stem from the state. Great care must be exercised if this insidious social disease known as communism does not become epidemic in the United States. Physicians particularly must recognize their responsibilities if democracy is to survive.

In support of the teachings of the founding fathers, which are clearly stated in the Declaration of Independence, and to prove that their primary motive was sound moral philosophy,

let me quote from the Declaration of Independence written in 1776 and from the writings of Cardinal Bellarmine, written in 1576:

Declaration of Independence, 1776

All men are created equal; they are endowed by their creator with certain unalienable rights.

To secure these rights governments are instituted among men.

Governments are instituted among men, deriving their just powers from the consent of the governed.

Cardinal Bellarmine, 1576

All men are equal, not in wisdom or in grace, but in the essence and nature of mankind.

Political right is from God and necessarily inherent in the nature of man.

It is impossible for men to live together without someone to care for the common good. Men must be governed by someone lest they be willing to perish.

It depends upon the consent of the multitude to constitute over itself a king, consul or other magistrate. This power is indeed from God, but vested in a particular ruler by the council and election of men.

Locke, an Anglo-Saxon, is given credit for being the first to call attention to the idea of "consent" in government. However, Locke received his idea from Suarez, a Spaniard, writing in 1600, and Bellarmine, an Italian, writing in 1576. Both placed emphasis on the consent of the governed and both gave the same philosophic argument to support the idea. Locke deserves great credit for popularizing this thinking.

Observation of the operation of moral law demonstrates that any violation of moral law invokes a penalty that cannot be avoided. These rights must be exercised with great care, and abuse must be avoided unless one is prepared to pay the price. More specifically, these rights include the right to life, bodily integrity, the necessities of existence, the essentials consonant with attaining man's ultimate destiny, the right of association and the right to possess and use property.

The use and exercise of any of these rights creates obligations and responsibilities. Every right and privilege has its commensurate responsibility. Neglect the responsibility and the right will be lost. As a physician, I have rights and privileges. I have the right to expect protection from the state in the exercise of my rights and privileges. This protection, however, may not exceed the protection that is given in the interest of the common good. In the exercise of my rights I must recognize that the implications are dual. In the use of rights or ownership there is a twofold character, individual and social. I must take into account not only my own advantage but also that of the common good. It follows, then, that the exercise of rights must be done in the light as they concern me and as they concern the common good. Since I am a social being, I must recognize that the rights of common good take precedence over the rights of the individual, when the two are in established conflict.

Exercise of my rights and privileges incurs obligations and duties; duties to my fellowmen. As a physician I have been given special training. This training is highly technical and is possessed by few persons. Am I permitted to use this special gift to promote my own selfish desires? As a social being and a component part of a complex society I must recognize that I have a part in the collective task.

Every physician has the obligation to make his special talent available to all the people. No physician by his own efforts could develop all the information he possesses, even though he were a Solomon and lived a thousand years. He must realize that his knowledge was developed by the collective efforts of the multitude that preceded him and that this knowledge may not be exploited. As a doctor, he serves in the capacity of a steward; he must never forget that some day he will be called on to give an accounting of his stewardship. Generally speaking, when physicians are motivated by selfishness, it is the result of living in a materialistic economy and of the almost complete lack of ethical and philosophic teaching in the schools. More and more doctors are now coming to realize that they are social beings and live in a society that is governed by Christian principles. They are beginning to understand that they cannot neglect their duties and retain their privileges. They are perilously close to reaping the just reward of their social sinfulness and neglect. It is their moral duty to make good medical care available to everybody. Right order

dictates that any social duty should be performed by the lower and better qualified group, but it also dictates that the failure of the lower group to recognize and perform its duties makes it mandatory that the higher body provide the answer. By this principle, through their social lethargy and neglect physicians have invited the social planners to invade their domain and usurp their rights. Are the physicians beginning to understand why the serpent of regimentation has reared its ugly head?

I abhor regimentation and communism, and I will oppose the communistic creed with all my energy. I recognize that the regimentation of the medical profession is only the beginning. It is an insidious promise of something for nothing that has its appeal, but the ultimate cost will be liberty—a price one dares not afford. Benjamin Franklin once said, "He who would sacrifice essential liberty for temporary security deserves neither liberty nor security." It is of much greater importance to prevent totalitarianism than to prevent regimentation of the medical profession. Organized medicine has a tremendous responsibility. If physicians permit the regimentation of the medical profession they will have provided the lever to break the seal of democracy and permit entrance of totalitarianism. They will have provided the fertile soil on which the seeds of communism will grow.

If this is to be accomplished, they must reject the teachings of the materialist sociologists and return to the teachings of the moral law. They must reject completely the doctrine of the materialist, which teaches that religion, and morality, is the opium of the people and that man is motivated entirely by instinct. Doctors must avoid this materialistic doctrine or by their acts they will be promoting regimentation. Neglect of social responsibility invites the state to take over with coercion and regimentation.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARD OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL* Dec. 27, page 1167.

NATIONAL BOARD OF MEDICAL EXAMINERS

AMERICAN BOARD OF MEDICAL EXAMINERS: *Parts I & II.* Various centers, Feb. 16-18. *Part III.* Chicago and New York, Jan. 14-16. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral.* New York, April 12-15. *Written.* Various Centers, July 16. Final date for filing application is Jan. 16. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral.* Philadelphia, April 2-4. Final date for filing application is January 19, 1948. *Written, Group B.* Various Centers, Feb. 16. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* San Francisco, April. Chicago, June. Final date for filing application is Feb. 1. *Written.* Oct. 18. Final date for filing application is June 1. Asst. Sec.-Treas., Dr. W. A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May or June. Final date for filing application is Feb. 1. Sec., Dr. W. J. German, 310 Cedar St., New Haven, Conn.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Baltimore, May. Chicago, Oct. *Written.* Various centers, Jan. 14. Sec., Dr. S. Judd Beach, 56 Ivie Road, Cape Cottage, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part I.* April-May. Applications are accepted for the next examination until Jan. 15, 1948. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, June 16-19. Final date for filing application is Feb. 1. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Philadelphia, March 8-10. Final date for filing application is March 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis, Mo.

AMERICAN BOARD OF PEDIATRICS: Philadelphia, Jan. 9-11. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines 9.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in April and November of each year in the home town of applicants. Sec., Dr. Robert H. Ivy, 1930 Chestnut St., Philadelphia.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* Washington, D. C., May 13-15, 1948. Final date for filing application is Feb. 15. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Chicago, June 1948. Final date for filing application is March 1. Sec., Dr. B. R. Kirklín, 102-110 Second Ave., S.W., Rochester, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Libel and Slander: Physician's Report to Patient Privileged.—The plaintiff sued the defendant physician for damages for slander by virtue of defendant's statement that plaintiff was suffering from a venereal disease. From a judgment in favor of the defendant, the plaintiff appealed to the district court of appeal, fourth district, California.

The plaintiff called at the office of the defendant physician on August 20 for treatment for injuries received in a fall down an embankment. Her condition was such that defendant deemed it necessary to give her a thorough physical examination, including tests for venereal disease. A sample of urine and a smear were taken by defendant and sent to a reputable laboratory in San Diego, Calif., for examination. Two days later he received a report from the laboratory to the effect that the microscopic examinations of both specimens indicated the existence of the venereal disease, which defendant had suspected as a result of the physical examination. The day before this, in response to a telephone message, the defendant had made a professional call on the plaintiff at her home and had made an appointment for her to call at his office the following morning, which appointment she did not keep. On receipt of the report from the laboratory, and because of the plaintiff's failure to keep the appointment, the defendant caused a letter, dated August 23, to be sent to her which contained the following:

Your laboratory report arrived this morning. It shows you are suffering from a venereal disease.

Under the law, we are compelled to report this to the health authorities, and to advise you against working in any establishment handling foods.

We are anxious to assist you, and we will hold up this report for twenty-four hours to give you a chance to step in and discuss your problem.

As the plaintiff did not appear at defendant's office he had one of his nurses telephone her at the drugstore where she worked. Plaintiff was not at the drugstore but her mother was there taking her place and, according to the nurse, she merely requested the mother to urge the plaintiff to call at defendant's office. The mother, however, testified that the nurse told her that the plaintiff was suffering from a venereal disease. The next day the plaintiff's landlady telephoned to defendant's office and asked that the defendant stop bothering the plaintiff, as the phone calls created commotion at the drugstore. The secretary who took this message understood it to be a request for the defendant to make a house call on plaintiff and so informed the defendant. Defendant therefore called on the plaintiff about twenty minutes later, and the conversation occurring at that meeting forms the basis of this action.

Present in the room at the time were the plaintiff and her landlady. Plaintiff's mother and a neighbor were, unbeknownst to the defendant, in an adjoining room. The landlady answered the door and told the defendant that she had called him. He wanted to know why. She said, "You should know the reason why, because of the letter that Mrs. Shoemaker has received from you." He asked her, "What letter?" and she said, "Do you mean to say that a letter like that would come out of your office without your knowledge?" He said, "If you are talking about any letter, you will have to take that up with my office nurse"; and then he asked her, "What letter?" and if he could see it. She said the letter was in a physician's hands and would be in a lawyer's hands, so he turned to the plaintiff and asked why she was suing. She replied, "Who said I was suing?" Then he shook his finger in the plaintiff's face and said, "Young lady, you are suffering from a severe case of gonorrhea." The plaintiff said, "Dr. Friedberg, I don't see how you can say that when I have negative reports from a laboratory saying that I don't have it." He answered, "I too have laboratory reports from a reliable laboratory that you have a positive smear and are suffering from a severe case of gonorrhea, and if you don't do something about it and come to my office I intend to make drastic charges against you." He turned and walked out the door.

The plaintiff testified that she received the defendant's letter on the morning of August 24; that a neighbor, Mrs. Burgomaster, was helping care for her and received the letter from the postman; that she told Mrs. Burgomaster the contents of the letter and that perhaps she read it; that she disclosed the contents of the letter to her mother and to the landlady prior to August 25. She then consulted another physician, who sent her to another laboratory in San Diego. A slide smear was made and examined microscopically and a culture was made, both with negative results. The defendant testified that he did not know that the plaintiff's mother or the neighbor were in the adjoining room and within hearing distance of the conversation. The plaintiff, however, knew of the presence of both of them but made no effort to check or adjourn the conversation concerning the letter and its contents, which conversation was opened and seemingly invited by the landlady. The statements of defendant conveyed no new knowledge to either the landlady or the plaintiff's mother, however, as the plaintiff had already told them of the letter and its contents. We must conclude, said the court, that it was news to the neighbor although the plaintiff testified in a deposition that she had told the neighbor of the laboratory report before August 25. The plaintiff contends that the foregoing constituted sufficient publication of the slander to be actionable.

We must first examine the question of qualified privilege, said the court. One privileged communication is defined by subdivision 3 of section 47 of the Civil Code, as follows: "In a communication, without malice, to a person interested therein, (1) by one who is also interested, or (2) by one who stands in such relation to the person interested as to afford a reasonable ground for supposing the motive for the communication innocent, or (3) who is requested by the person interested to give the information." Section 48 of the same code, in effect in August 1945, provided: "In the cases provided for in subdivisions three, four, and five, of the preceding section, malice is not inferred from the communication or publication." The plaintiff and defendant occupied the relation of physician and patient. It was the duty of the defendant, as her physician, to treat plaintiff and to inform her of the ills from which he believed she was suffering. The letter written by him was addressed to plaintiff and truthfully conveyed to her the information given him by a reputable laboratory, which information he believed to be true. That the subject matter of this letter concerned a subject in which both parties were interested cannot be questioned. Therefore it was privileged as to plaintiff. Further, the writing of this letter to the plaintiff was not a publication of its contents under the slander laws of this state. Its original publication was by plaintiff herself when she disclosed its contents to her mother, her landlady and the neighbor. As defendant had no part in this publication he cannot be held responsible for it. What is the situation, however, with regard to the neighbor who was in the dinette at the time of the conversation? Mrs. Rice was a neighbor of the plaintiff and a tenant of the plaintiff's landlady, living in one of two houses on the same lot, and she walked in the back door at about the same time as the defendant entered the front door of the house. The plaintiff, the landlady or the plaintiff's mother had not invited her to come and did not know that she intended to do so, but all of them knew of her arrival. The defendant was positive that he did not know of her presence. It appears that the neighbor was merely a casual bystander who overheard the remarks of the defendant without any connivance on his part. The mere fact, said the court, that third persons not legally interested in the communication are accidentally present and hear it will not alone take the case out of the privilege if it were unavoidable or happened in the usual course of business affairs.

We therefore conclude, said the court, that as the statements of the defendant were qualifiedly privileged as far as three of the hearers were concerned and were overheard by the fourth, who was merely a casual bystander for whose presence the defendant was in no manner responsible, plaintiff cannot recover without proof of actual or express malice on the part of the defendant. Under these circumstances the burden of proving such malice rests on the plaintiff.

A physician is required by rules of the board of health to report a case of venereal disease within twenty-four hours of its discovery; if the infected patient takes and continues treatment, only the initials need be placed on the report, otherwise the name must be given. There is nothing in the record to support a finding of actual or express malice on the part of defendant, said the court. He actually received a report from a reputable, established laboratory that the plaintiff was suffering from a venereal disease. He believed, relied and acted on this report. The fact that this report from the laboratory was a mistake, if such be true, cannot affect the question of actual malice if the defendant believed it to be true and was actually acting on that belief and was proceeding without malice within the provisions of the venereal disease law. The defendant testified that his requests that the plaintiff consult him in his office were made with the idea of inducing the plaintiff to take treatments so as to save her the embarrassment of having her name rather than her initials reported to the board of health. There is nothing in the record contradicting this testimony, and the inferences from the entire record support it. Therefore the conclusion is clear that instead of being actuated by any malice against the plaintiff, defendant was endeavoring to protect her as much as possible from the effects of any publicity concerning the disease from which he believed she was suffering.

As the statements made on August 25 were qualifiedly privileged and as there was no proof of actual or express malice, plaintiff failed to meet the burden of proof resting on her. Accordingly the judgment in favor of the defendant physician was affirmed.—*Shoemaker v. Friedberg*, 183 P. (2d) 318 (Calif., 1947).

Workmen's Compensation Acts: Refusal of Employee to Submit to Operation for Removal of Coccyx.—The plaintiff filed a claim for compensation for injuries sustained as the result of an industrial accident and was granted a maximum award for total disability. From this award, the defendant appealed to the court of appeal of Louisiana.

After discussing the facts surrounding the occurrence of the accident, the court of appeal concluded that the plaintiff was entitled to compensation for total disability unless, as the defendant contended, her refusal to submit to a coccygectomy suspended her right of recovery. The medical testimony, said the court, as to the character of this operation is almost unanimous and is to the effect that it is a simple operation unattended by danger to life. It is for the most part likened to an appendectomy. In a prior Louisiana case, however, the Supreme Court said: "If we were to consider that the tendered operation was to be regarded in the nature, as to the seriousness thereof, of a tonsillectomy, an appendectomy or an abdominal operation for the removal of a tumor, it certainly could not in the light of the jurisprudence of this state be considered such an operation that the employee's refusal to undergo it would be unreasonable or arbitrary." The plaintiff, said the court, continues to suffer pain in the region of her pelvis, though she complains particularly of her coccyx, and while she has definitely refused to submit to the removal of her coccyx on the ground that she is afraid and will not do so as long as she can bear the pain, she seems to be justified in her refusal. While practically all the medical experts agree that the operation is a simple one, nevertheless the defendant's physician is of the opinion that: "She could have the coccyx removed and this would probably cure the pain in this region, but this is not a simple operation and should be done only by a bone surgeon or by a surgeon who has had some experience in doing this kind of work." This physician also said: ". . . unless you know your anatomy . . . and operate properly, . . . the damage to the soft tissue around, particularly the nerve filaments, will result in a painful condition even after the operation." Under these circumstances the court of appeal held that the plaintiff's refusal to submit to an operation for the removal of her coccyx was not unreasonable. Accordingly the judgment in favor of the plaintiff was affirmed.—*Jacobson v. Maryland Casualty Co.*, 30 So. (2d) 887 (La., 1947).

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted.

American Heart Journal, St. Louis

34:471-626 (Oct.) 1947

- *Aneurysm of Pulmonary Artery: Review of Literature and Report of a Case. R. A. Deterling Jr. and O. T. Clagett.—p. 471.
- Blocked (Nonconducted) A-V Nodal Premature Systoles Imitating First and Second Degree A-V Block. R. Langendorf and J. S. Mehlman.—p. 500.
- Changes in Cardiac Vibrational Intensity in Response to Physiologic Stress. J. H. Foulger, P. E. Smith Jr. and A. J. Fleming.—p. 507.
- Complete Heart Block in Younger Age Groups. J. H. Crawford and N. J. Di Gregorio.—p. 540.
- *Heart Size in Neurocirculatory Asthenia, Effort Syndrome, or Anxiety Neurosis. J. Carloti, M. E. Cohen and P. D. White.—p. 552.
- Interpreting Electrocardiogram of Heart and Great Vessel Motion. B. R. Boone and others.—p. 560.
- *Pitressin Test of Coronary Insufficiency. A. Ruskin.—p. 569.

Aneurysm of Pulmonary Artery.—According to Deterling and Clagett true aneurysm of the pulmonary arterial trunk or its major branches is rare in that only 8 cases were discovered in 109,571 necropsies. The authors analyze 36 cases of aneurysm of the pulmonary artery proved by necropsy and collected from the literature. The addition of this group to the 111 cases proved at necropsy and reported by Boyd and McGavack in 1939 brings the total number of authentic cases to 147. The authors stress the advisability of omitting cases in which only the clinical diagnosis has been made. Although syphilis was a definite factor in more than a third of the cases, congenital cardiovascular anomalies also play a major role. A patent ductus arteriosus is present in more than 20 per cent of the cases. Other less common causes are subacute bacterial endarteritis, atheroma and trauma. The early symptoms are dyspnea, cough and pain in the thorax. Cyanosis and edema usually are later manifestations, often dependent on cardiac failure or congenital anomalies. The heart, especially the right ventricle, frequently is enlarged. Right axis deviation is common. Most significant is the roentgenoscopic finding of a discrete pulsatile hilar mass, separate from the aortic shadow. The case described by the authors concerned a man, aged 37. The clinical diagnosis was confirmed by necropsy. There were a patent ductus arteriosus, atheroma of the right pulmonary artery and bilateral pulmonary arteriosclerosis as well as a history of trauma. Surgical cure by ligation of the right pulmonary artery and pneumonectomy was prevented by the extent of the aneurysm and the atheromatous calcification of the vessel.

Heart Size in Neurocirculatory Asthenia.—Carloti and his associates say that past reports of investigation of heart size in neurocirculatory asthenia or effort syndrome emphasized the apparently small size of the heart shadows. They measured the cardiac diameters and areas of 67 patients with neurocirculatory asthenia and compared them with similar measurements of 50 healthy subjects in the same age group, between 20 and 30 years of age, and also with the measurements of young men who have been ill with tuberculosis. They found that when heart areas and heart diameters were adjusted for body surface area of each subject there were no statistically significant differences between those with neurocirculatory asthenia and normal controls. Heart sizes in healthy controls and in those with acute and chronic neurocirculatory asthenia or tuberculosis were not very different when adjustments were made for body size.

"Pitressin" Test of Coronary Insufficiency.—Ruskin points out that in view of the powerful vasoconstrictor effects of "pitressin," particularly on the coronary arteries, the use of this agent suggested itself as a test of latent coronary insufficiency,

to differentiate true angina pectoris from other conditions associated with chest pain. Patients with recent myocardial infarction or congestive heart failure were excluded, but patients considered to have angina pectoris and those whose symptoms were regarded as nonanginal in type were given slowly increasing doses of "pitressin." For a subject of 70 Kg. in weight satisfactory dosages were found to be 2 cc. (40 pressor units) intramuscularly or 0.75 cc. intravenously, injected in about sixty seconds. The criteria of a positive test have been taken to be change of a positive T wave in leads 1, 2 or 4 to a flat, diphasic or negative T wave, or ST segment deviations totalling 3 mm. or more in leads 1, 2, 3 and 4 F. Close parallelism was noted in the results of the "pitressin" and Master exercise tests in both the positive and negative cases. Of 12 patients with clinically typical angina pectoris, the "pitressin" test was positive in 8. The Master test was positive in 5 of the 8 patients and negative in 3. The test, confirmed by the Master test in the former group, was negative in 10 patients with atypical precordial pain and 5 normal controls. Positive tests confirm the clinical suggestion of coronary pain; negative tests do not exclude it. The side effects of "pitressin" render its general use as a test for latent coronary insufficiency inadvisable. In the hands of experienced investigators it may be useful in the evaluation and management of coronary sclerosis and for experimental purposes. The results of the use of "pitressin" attest both coronary spasm and relative myocardial ischemia as theoretic bases for clinical anginal pain.

American J. Digestive Diseases, Fort Wayne, Ind.

14:275-314 (Sept.) 1947

- Certification of Death of 1,000 Diabetic Patients. H. L. Lombard and E. P. Joslin.—p. 275.
- Hyperinsulinism with Hypoglycemia Relieved by Removal of Pancreatic Tumor. M. J. Kuffel, D. P. Foster and W. L. Lowrie.—p. 279.
- Moderate Fats in Infectious Hepatitis: New Concept Based on Recent Advances. N. E. Reich, Dorothy L. Swartz and P. Beckman.—p. 281.
- The Post-Cholecystectomy Syndrome, Incidence, Etiology and Treatment. W. T. Davison.—p. 290.
- *Pathogenesis and Treatment of Ulcerative Colitis with Extract of Hog Stomach. R. Ehrlich.—p. 294.
- Procedure Helping the X-Ray Examination of Gastro-Esophageal Segment. V. Latraverse.—p. 298.
- Sodium Ascorbate in Treatment of Allergic Disturbances. S. L. Ruskin.—p. 302.
- A Study of a Group of Poorly Regulated Diabetic Patients. A. P. Briggs.—p. 306.

Extract of Hog Stomach in Ulcerative Colitis.—Ehrlich asserts that with few exceptions, such as amebic and bacillary dysentery and tuberculous enterocolitis, ulcerative colitis is a nonspecific disease. Proteolytic enzymes are present in the colon and the rectum. Gastrointestinal hypermotility, whether it be neurogenic, psychogenic or gastrogenic, increases the delivery of proteolytic enzymes into the colon, thus predisposing the colonic mucosa to autolysis. It is presumed that the colon normally contains an antiproteolytic or protective substance to inhibit dissolution of the mucosa. This antiproteolytic substance seems to be particularly deficient in the descending colon and rectum under the mentioned circumstances, thus upsetting the proteolytic-antiproteolytic enzymatic balance, predisposing the individual to mucosal autolysis. Desiccated extract of hog stomach appears to contain this antiproteolytic substance. Fifteen cases of idiopathic ulcerative colitis are reported in which extract of hog stomach was administered. An average dose of 40 Gm. was given in divided doses before meals. In the protracted and fulminating cases, the initial dose was always 60 Gm. a day: it was gradually reduced as amelioration of symptoms and endoscopic improvement resulted. At least 6 ounces (177 cc.) of liquid should be taken with or immediately following administration of the extract. The dosage was not reduced until adequate resolution was evident by endoscopic visualization. In each case a sigmoidoscopy was performed at weekly intervals during the active phase, then once a month. A maintenance dose of 10 Gm. of extract three times daily was continued for from one to four months. Edema, inflammation, spasm and ulceration subsided under the influence of the hog stomach extract. Four patients required sulfonamide therapy for secondary infections.

American Journal of Medicine, New York

3:381-508 (Oct.) 1947

- *Primary Hypertrophy and Hyperplasia of Parathyroid Glands as Cause of Hyperparathyroidism. H. M. Rogers and F. R. Keating Jr.—p. 384.
- Shoulder-Hand Syndrome: Associated Painful Homolateral Disability of Shoulder and Hand with Swelling and Atrophy of Hand. O. Steinbröcker.—p. 402.
- Altered Response of Human Beings to Intramuscular Administration of Typhoid Vaccine During Massive Salicylate Therapy. B. V. Jager and Margaret Nickerson.—p. 408.
- Gastroscopy with Transparent Balloon: Method for Visualization of "Blind Areas." H. Colcher.—p. 423.
- Chemical Evaluation and Labeling of Protein Hydrolysates for Human Consumption. F. Homburger and N. F. Young.—p. 427.
- Use of Protein Hydrolysates by Mouth. F. Homburger.—p. 430.
- Contributions of Right Heart Catheterization to Physiology of Congestive Heart Failure. D. W. Richards Jr.—p. 434.
- Anticoagulation Therapy with Heparin/Pitkin Menstruum in Thromboembolic Disease. L. Loewe.—p. 447.
- Anticoagulant Therapy with Heparin. G. Murray.—p. 468.

Hyperparathyroidism.—Rogers and Keating review the published cases of primary hypertrophy and hyperplasia of the parathyroid glands and summarize the observations in 4 patients seen at the Mayo Clinic. They stress that primary hyperplasia of the parathyroid glands is a distinct pathologic entity and that it must be differentiated from parathyroid adenoma composed of clear cells, from metastatic renal cell carcinoma to the thyroid and from secondary parathyroid hyperplasia. They discuss the difference between hypertrophy and hyperplasia and present evidence for the assumption that both are present but that hyperplasia predominates. They review the clinical implications of primary hyperplasia. In the majority of the reported cases of primary hyperplasia the patients have had obvious hyperparathyroidism. Bergstrand was the first to suggest that primary parathyroid hyperplasia is the counterpart in the parathyroids of exophthalmic goiter in the thyroid. This concept appears to be justified. The authors believe that the histologic picture of primary hyperplasia always indicates a primary excess of parathyroid hormone.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

58:267-390 (Sept.) 1947

- Planigraphy in Diagnosis of Bronchogenic Carcinoma. L. G. Rigler and T. B. Mermer.—p. 267.
- *Benign Pneumoconiosis Due to Metal Fumes and Dusts. O. A. Sander.—p. 277.
- Spontaneous Healing of Localized Hematogenous Spread in Pulmonary Tuberculosis. L. Dunner.—p. 283.
- Roentgen Appearance of Primary Reticulum Cell Sarcoma of Bone. R. S. Sherman and Ruth E. Snyder.—p. 291.
- Posterior Displacement of Lumbar Vertebrae: Classification and Criteria for Diagnosis of True Retrodisplacement of Lumbar Vertebrae. A. Melamed and D. J. Ansfield.—p. 307.
- Osteochondritis of the Internal Cuneiform, Bilateral: Case Report. D. B. Meistrup.—p. 329.
- Treatment of Recurrences and Evaluation of Criteria for Selection of Treatment of Cancer of Larynx. J. V. Blady.—p. 331.
- Standardization of Roentgenographic Tubes and High Voltage Cables. R. H. Morgan.—p. 342.
- Comparative Value of Deep and Supervoltage Roentgen Therapy. T. Leucutia.—p. 347.
- Effect of Roentgen Rays on In Vitro Motility of Feline Intestine. B. N. Craver.—p. 357.

Benign Pneumoconiosis Due to Metal Fumes and Dusts.—Sander thinks that the term pneumoconiosis requires redefinition because it is widely misunderstood. Its generic meaning is "dust added to the lungs," without any implication of what reaction may have resulted from the dust. Only two dusts are known to cause significant fibrotic reactions in the lungs: free silica and asbestos. Because silicosis and asbestosis are the best known pneumoconioses, the terms fibrosis and pneumoconiosis have become almost synonymous. The benign pneumoconioses are those resulting from inert deposits of dust in the lungs, which are not the cause of fibrosis or disability. Siderosis is one of these. The author adds to the list of occupations which may be producers of siderosis that of metal cutting with the oxyacetylene flame. He reports 3 cases which have the following diagnostic points in common: (1) discrete and rather sharply defined rounded shadows of more or less uniform size and equal distribution in both lungs; (2) no tendency to confluence of the shadows, and (3) hilus shadows always smaller than would be expected with silicosis of this degree. Gross black pigmentation at necropsy has been erroneously diagnosed as

anthracotic, when ferrocyanide stain would have revealed iron. Gross round lesions also have been incorrectly diagnosed as silicotic without use of the connective tissue stains to determine whether they were true fibrotic nodules. These differential procedures are recommended for all nodular or stippled roentgen shadows. Finally, more careful analysis of past exposures to dust is recommended whenever a roentgenogram shows nodular shadows.

American Journal of Surgery, New York

74:383-498 (Oct.) 1947

- Relationship of Vagina to Adjacent Organs in Reconstructive Surgery: Histologic Study. J. V. Ricci, J. R. Lisa, C. H. Thom and W. L. Kron.—p. 387.
- Curare—Cyclopropane Anesthesia: Clinical Observation in 350 Cases. H. M. Ausherman and F. S. Brannen.—p. 411.
- Value of X-Rays in Study of Postoperative Emergencies and Complications. J. T. Case.—p. 414.
- Effect of Glycerite of Hydrogen Peroxide on Healing Time in Anorectal Surgery. J. T. Jenkins.—p. 428.
- Tendon Transplants for Radial and Ulnar Nerve Paralysis. T. A. Lamphier and J. W. Littler.—p. 431.
- Ultraviolet Blood Irradiation Treatment of Pelvic Cellulitis: Knot Method. R. C. Olney.—p. 440.
- Combined Appendectomy and Inguinal Herniotomy. W. H. Myers and Ruth F. Rominger.—p. 444.
- Comparative Study of Chemotherapies in Surgery of Pilonidal Sinus. J. E. Hamilton and L. M. Cattanach.—p. 449.
- Hemorrhoidectomy. C. J. Wagner.—p. 455.
- Acute Gastrointestinal Perforations: Plan for Postoperative Treatment. P. T. Treiger.—p. 459.
- Diverticula and Other Mucosal-Lined and Pathologic Out-Pouchings of Gastrointestinal Tract. W. H. Gerwig Jr.—p. 462.
- New Tension Suture Technic. A. J. Lesser.—p. 470.
- *Early Postoperative Ambulation. E. A. Balcer.—p. 472.

Early Postoperative Ambulation.—Balcer reviews experiences with early ambulation in 144 patients who underwent varied abdominal operations. Patients are allowed out of bed the morning of the first postoperative day except when definite contraindications are present, such as shock, severe abdominal distention, cardiac decompensation and second side thoracolumbar sympathectomies and demonstrable vasomotor instability in the upright position. The method consists of having the patient turn on his side and of winding the bed to a sitting or semisitting position. The feet are then assisted over the edge of the bed by the attendant, and with the help of the nurse the patient sits on the side of the bed. Then comes standing for a few seconds and taking deep inspirations. This usually results in a productive cough, the mechanics being the emptying of the accumulated bronchial secretions. The patient then walks to a chair and sits down. The return to bed is accomplished in the same manner. The procedure is repeated in the afternoon. On each successive day the activity is increased. Analysis of the complications developing in 8 patients reveals that none were caused by the early ambulation. The improved general appearance, the absence of abdominal distention, the reduced necessity of catheterization and gastric decompression and the infrequent need for oxygen therapy are some of the benefits of early rising.

Annals of Otol., Rhin. and Laryngology, St. Louis

56:514-846 (Sept.) 1947. Partial Index

- Pathology of Vertigo Arising from Peripheral Vestibular Apparatus. J. R. Lindsay.—p. 541.
- Incidence of Vertigo in Neurologic Conditions. I. Levy and J. L. O'Leary.—p. 557.
- Pathology of Larynx: Photographic Analysis. P. H. Holinger, A. H. Andrews Jr., G. C. Anison and K. C. Johnston.—p. 583.
- *Present Status of Diagnosis and Treatment of Endolymphatic Hydrops (Ménière's Disease). H. L. Williams.—p. 614.
- Artificial Middle Ear. M. E. Pohlman.—p. 647.
- Tolerance for Pure Tones and Speech in Normal and Defective Hearing. S. R. Silverman.—p. 658.
- Use of Plastic Tubing in Treatment of Chronic Maxillary Sinusitis. J. J. Conley.—p. 678.
- Carcinoma of Middle Ear and Mastoid Process. A. A. Grossman, W. A. Donnelly and M. F. Snitman.—p. 709.
- Deep Neck Infections: Part II. A. L. Beck.—p. 722.

Endolymphatic Hydrops (Ménière's Disease).—Williams states that much of the confusion with regard to Ménière's syndrome has been dissipated by the discovery of the true pathologic picture in authenticated cases of this disorder. In such

cases gross dilatation of the endolymphatic system, affecting chiefly the scala media (ductus cochlearis BNA) and the sacule and utricle, is present. Minor degenerative changes are found in the organ of Corti and at times in the stria vascularis. Inflammatory changes have been conspicuously absent. Atkinson's theory has little if any clinical or laboratory evidence to support it. Measures have proved effective which were directed toward correcting the electrolyte balance in the tissue fluids, toward controlling fluid metabolism or toward stimulating the autonomic nervous system and producing vigorous vasodilation. At the Mayo Clinic atropine or epinephrine has been found helpful in controlling the acute attack. As regards surgical treatment, there is a choice between a major neurosurgical procedure entailing craniotomy and a minor surgical procedure requiring no more than thirty minutes for its performance. The author feels that in the United States as in England labyrinthotomy is destined to replace intracranial division.

Archives of Surgery, Chicago

55:239-386 (Sept.) 1947

- Duodenal Regurgitation. A. R. Metz.—p. 239.
Relations of Nerve Roots to Abnormalities of Lumbar and Cervical Portions of Spine. J. J. Keegan.—p. 246.
*Herniated Intervertebral Disk: Analysis of 90 Cases. W. T. Peyton and D. R. Simmons.—p. 271.
Bilateral Oophorectomy in Early Pregnancy: Cesarean Section at Term. H. K. Bonn.—p. 288.
*Radical Mastectomy: Prognosis After Survival for Five Years. A. B. McGraw.—p. 292.
Amebiasis with Pulmonary Involvement. F. A. Hughes Jr. and K. F. Westphal.—p. 304.
Traumatic Biliary Bronchial Fistula, with Report of 2 Cases Due to War Wounds. C. C. Guy and H. T. Oleck.—p. 316.
Congenital Atresia of the Tracheoesophageal Fistula: 4 Consecutive Cases of Successful Primary Esophageal Anastomosis. W. P. Longmire Jr.—p. 330.
Open Reduction for Fractures of Pelvic Girdle. H. F. Poyner and D. C. Hucherson.—p. 339.
*Effects of Supradiaphragmatic Section of Vagus Nerves in Man. W. B. Crandell, W. E. Boehm and J. H. Mulholland.—p. 343.
Review of Urologic Surgery. A. J. Scholl, F. Hinman, A. B. Hepler and others.—p. 349.

Herniated Intervertebral Disk.—Peyton and Simmons analyze 90 cases in which operation was performed for herniation of a disk. The disk was considered pathologic only in cases in which a loose fragment of disk tissue was observed lying free in the spinal canal or in which there were definite bulging and spontaneous protrusion of nuclear material when the annulus fibrosus was opened. Eighty pathologic and 10 normal disks were exposed at surgical operation. The relief obtained was essentially the same with simple removal of the lesion as with removal and spinal fusion. The results were satisfactory in the group of 80 cases in which a definitely pathologic disk was removed. Seventy-two patients were followed, and only 3 had continued pain or disability, of unknown origin. The results were not good in the 10 cases in which exploration was considered to have revealed no lesion of the disk. This indicates that simple removal of the lesion of the disk is a satisfactory operation and that improvement in results is likely to be realized through better selection of cases for operation rather than through the introduction of new operative procedures.

Radical Mastectomy.—McGraw attempted to discover what eventually happens to women who have undergone the Halsted radical mastectomy and have survived five years or longer. He has follow-up information on all but 6 of 412 patients. A recent check reveals that 177, or 43 per cent, of the women survived the operation five years or more. Comparison of the results for those of the 177 patients who had early postoperative roentgen therapy with the results for those who did not is inconclusive as to any clearcut beneficial influence of such treatment on the prognosis. The author does not wish to imply that early postoperative roentgen therapy is either harmful or without possible value. The patients to whom such treatment was given were not selected with sufficient consistency and impartiality to warrant conclusions. The proportion of women with axillary involvement who received roentgen therapy was considerably larger than that of the women who were free from such metastases. The author has become strengthened in the conviction that a thoroughly radical operation is at present the only procedure that gives patients a good chance of long survival. Such

an operation should be undertaken whenever it can be performed with technical adequacy unless coexisting metastases are so advanced or widespread and the patient's expectancy of life is clearly so short as to make operative intervention futile.

Section of Vagus Nerves.—Crandell and his associates studied a group of patients undergoing section of the vagus nerves for peptic ulceration. Preoperative and postoperative tests have demonstrated the following facts: 1. The secretion of gastric acid in response to alcohol administered intravenously or intragastrically appears to be diminished after section of the vagus nerve. 2. Section of the vagus nerve does not change the electroencephalographic pattern of patients with peptic ulcer. 3. Nitrogen balance studies did not indicate any impairment of utilization and absorption of protein as a result of supradiaphragmatic section of the vagus nerve. 4. Diminished gastric motility has been found clinically and roentgenographically. Certain unpleasant symptoms have been attributed to the resultant dilated stomach.

Bulletin of Johns Hopkins Hospital, Baltimore

81:163-216 (Sept.) 1947

- Progressive Paralysis of Nervus Interosseus Dorsalis: Pathological Findings in One Case. F. J. Otensack.—p. 163.
Mechanism of Excretion of Ammonium Thiosulfate. J. Franklin, J. Genest and E. Newman.—p. 168.
*Use of Television in Surgical Operations. I. R. Trimble and F. M. Reese.—p. 186.
Physiological Study of Congenital Heart Disease. IV. Measurements of the Circulation in the Selected Cases. L. D. Vandam, R. J. Bing and F. D. Gray Jr.—p. 192.

Television in Surgical Operations.—Trimble and Reese point out that the customary method of demonstrating surgical operating technique to students and to visiting doctors has proved unsatisfactory for two reasons. The observers cannot see the operating field properly; these observers bring contamination into the operating room. To overcome these difficulties the authors conceived the idea of employing television. On Feb. 27, 1947, television of surgical operations was used for the first time at the Johns Hopkins Hospital. Five operations were transmitted to ten television receivers in four different classrooms. Through a loud speaker system the surgeon described each operation step by step as he performed it. Before operations were commenced the camera recording the operating field was clamped to the overhead operating light 4½ feet (137 cm.) above the operating table and was accurately focused. So sharp was the image that when a dollar bill was placed on the operating table the serial numbers could be clearly read on the projection screens. A 135 mm. focal length lens gave a field of view of 8½ by 11½ inches (21.6 by 29.2 cm.) at this distance. Each step in the operation was clearly recorded by television. The second television camera was installed in the gallery of the operating room to show a general view of the activity in the operating room. Pictures which were taken by this second camera were at times flashed on the projection screens, alternating with the first camera, which was recording a close-up view of the operative field only.

California Medicine, San Francisco

67:211-274 (Oct.) 1947

- Indications for Surgery of Ovary. L. A. Emge.—p. 211.

VIRAL DISEASES—A PANEL DISCUSSION

- Etiology and Epidemiology of Virus Group of Encephalitides. W. McD. Hammon.—p. 217.
Clinical Aspects of Encephalitides. P. M. Hamilton.—p. 221.
Present Concepts of Epidemiology of Poliomyelitis. N. Nelson.—p. 224.
Viral Pneumonias. H. A. Reimann.—p. 227.
Recent Advances in Diagnosis and Prevention of Mumps and Measles. H. E. Pearson.—p. 230.
Influenza—Review of Recent Developments. M. D. Eaton.—p. 233.
Viral Studies on Etiology of Epidemic Diarrhea of Newborn. G. Meiklejohn.—p. 238.
Symptoms of Acute Pancreatitis. J. R. Paxton and J. H. Payne.—p. 241.
Spontaneous Fracture of First Rib Due to Muscle Pull: Case Report. A. Waxman and H. Geshelin.—p. 243.
Amebiasis—Pathology, Diagnosis, and Recent Developments in Therapy. W. Bostick, H. G. Johnstone and H. H. Anderson.—p. 245.
Sarcoma of Soft Tissues. J. Budd.—p. 249.

Endocrinology, Springfield, Ill.

41:207-272 (Sept.) 1947

- Effect of Diethylstilbestrol on Alloxan Diabetes in Male Rat. D. J. Ingle, J. E. Nezanis and Mildred C. Prestrud.—p. 207.
Increased Fat Factor Production After Adrenal Enucleation. F. A. Hartman, K. A. Brownell and R. A. Knouff.—p. 213.
Intracellular Colloid Droplets as Basis for Thyrotrophic Hormone Assay in Chick. S. Dvoekín.—p. 220.
Role of Adrenal Cortex and Thyroid in Mobilization of Nitrogen from Tissues in Fasting. A. White and T. F. Dougherty.—p. 230.
Cytochemical Study of Adrenal Cortex in Hypo- and Hyperthyroidism. Helen Wendler Deane and R. O. Greep.—p. 243.
Adrenal and Early Hepatic Regeneration. Doreen Berman, Marjorie Sylvester, Eleanor C. Hay and H. Selye.—p. 258.

Gastroenterology, Baltimore

9:335-497 (Oct.) 1947

- Present Status of Investigations on Peptic Ulcer: Report of a Survey by National Committee of American Gastroenterologic Association for Study of Peptic Ulcer. D. J. Sandweiss.—p. 335.
Clinical Observations on Starvation Edema, Serum Protein and Effect of Forced Feeding in Anorexia Nervosa. J. M. Berkman, J. F. Weir and E. J. Kepler.—p. 357.
Sclerosing Therapy of Esophageal Varices. C. O. Patterson and M. O. Rouse.—p. 391.
Psychogenic Factors in Diseases of Digestion. J. H. Conn.—p. 399.
Carcinoma of Islets of Langerhans: Review of Literature and Report of 2 Cases. B. S. Gordon and R. G. Olivetti.—p. 409.
Electrolyte Diffusion in Relation to Acidity Regulation of Gastric Juice. T. Teorell.—p. 425.
Diurnal Variations in Acuity of Olfaction and Food Intake. F. R. Goetzl and Freya Stone.—p. 444.
Comparison of Effect on Gastric Secretion of Atropine, Demerol and Trasentine with Atropine. B. B. Clark.—p. 455.
Effect of Acetylsalicylic Acid on Gastric Secretion. B. B. Clark and W. L. Adams.—p. 461.

Starvation Edema, Serum Protein and Forced Feeding in Anorexia Nervosa.—Berkman, Weir and Kepler point out that during and after World War I it was observed that starvation often was followed by edema, and in about half of the subjects the concentration of the serum proteins was decreased. It also was observed that under apparently identical circumstances normal values for serum proteins might be obtained and that definitely subnormal values were not necessarily associated with edema. Possibly because the observations first mentioned were more in keeping with Starling's theory of formation of edema, emphasis was placed on the importance of the serum proteins in maintaining a dynamic equilibrium between the intravascular and interstitial fluids. During and following World War II emphasis was placed on the absence of correlation between starvation edema and the concentration of serum proteins. Starling's concepts have been scrutinized and sometimes discredited. The authors were interested in the manner in which patients who were emaciated as a result of anorexia nervosa have gained weight. Thirty-one patients with anorexia nervosa were studied at the Mayo Clinic with particular attention to the weight curve during dietary treatment, the occurrence of edema and its relation to the weight curve and the relation of the edema to the concentration of serum protein. No pitting edema was observed at any time in 15 patients, while in 12 patients edema was present on admission. Four patients acquired edema during treatment, and in 6 instances preexistent edema was increased following treatment. Among the patients who recovered from emaciation and may never have exhibited edema, the character of the weight curve suggested that a sequence of events occurred which was identical in character with those which occurred in patients who did exhibit edema. In the treatment of anorexia nervosa three phases can often be seen in the weight curve. In the first phase edema may occur or increase if it has been present. In the second phase edema may persist or slowly decrease while the patient gains flesh. The weight of water lost is approximately equal to the weight of the flesh gained. In the third phase the disturbance in water balance has been corrected, waterlogging has been overcome and a progressive gain in weight occurs. The weight curve may be misleading in evaluating the actual storage of flesh. In severe cases of untreated anorexia nervosa values for the serum proteins more often than not were within the normal range. In about a third of the cases values lower than normal were encountered. The level of the serum protein usually could not be correlated with

the presence or absence of edema. With treatment, the concentration of serum protein may decrease temporarily, possibly because of hemodilution.

Sclerosing Therapy of Esophageal Varices.—Four years have elapsed since Patterson and Rouse first employed the injection of a sclerosing solution through the esophagoscope in the treatment of esophageal varices. They present data on the effect of this measure in 24 patients, who had as their chief presenting complaint recurring massive hematemesis. The authors stress the decreased incidence of hemorrhage after injection therapy, as compared with the incidence of hemorrhage before this treatment.

Carcinoma of Islets of Langerhans.—Gordon and Olivetti review 20 cases of carcinoma of the islets of Langerhans from the literature and describe 2 new cases. They emphasize that carcinoma of the islets of Langerhans is a rapidly growing tumor which occurs more commonly in males, is more frequent in middle age, may or may not produce hypoglycemia, arises oftenest in the tail of the pancreas and metastasizes quickly and widely to neighboring and distant structures, but oftenest to the liver and to nearby lymph nodes. The usual histologic criteria for malignancy are not applicable to an islet cell tumor. It is only the presence of metastases that reveals its malignant nature.

Iowa State Medical Society Journal, Des Moines

37:435-480 (Oct.) 1947

- Acute Appendicitis. I. S. Ravdin.—p. 435.
Symptoms of Renal Stone. R. H. Flocks.—p. 439.
Anticoagulant Drugs. D. J. Haines.—p. 446.
Examination of Unconscious Patient. J. T. Baker.—p. 449.
Therapeutic Emergency Measures in Bronchial Asthma. L. J. Halpin.—p. 454.
Diagnosis and Treatment of Salivary Calculi. F. P. Quinn.—p. 459.

37:481-524 (Nov.) 1947

- Experience with Anticoagulants in Management of Acute Myocardial Infarction. R. L. Parker.—p. 481.
Mechanics of Functional Gastro-Intestinal Complaints. D. A. Glomset.—p. 484.
Etiology of Hemorrhage in Ocular Fundus. A. M. Culler.—p. 486.
Rh Factor. F. C. Coleman and J. R. Schenken.—p. 492.

Journal of Bacteriology, Baltimore

54:283-399 (Sept.) 1947. Partial Index

- Cytochemical Mechanisms of Penicillin Action: III. Effect on Reaction to Gram Stain in *Staphylococcus Aureus*. Jean Dufrenoy and R. Pratt.—p. 283.
Effect of Impurities on Chemotherapeutic Action of Crystalline Penicillin. Gladys L. Hobby, Tulita F. Lenert and Beverly Hyman.—p. 305.
Mouse Protection Method for Estimation of Antigenic Pneumococcal Polysaccharide in Solution. C. Sandage and O. K. Stark.—p. 333.
Atypical Strain of *Pseudomonas Aeruginosa*. P. H. Kopper.—p. 359.
Correlation Between Inhibition of Drug Resistance and Synergism in Streptomycin and Penicillin. M. Klein and L. J. Kimmelman.—p. 363.
Oral Immunity Tests of Dysentery Antigen in White Mice. H. M. Powell and W. A. Jamieson.—p. 371.
Production of Aspergillie Acid by Surface Cultures of *Aspergillus Flavus*. C. R. Woodward Jr.—p. 375.
Antibiotic Production by Marine Microorganisms. W. D. Rosenfeld and C. E. Zebell.—p. 393.

Effect of Impurities on Penicillin Therapy.—Hobby and her associates say that impure penicillin was found to be three to five times more effective than crystalline penicillin G in protecting mice against experimentally produced hemolytic streptococcus infections. The same difference in activity has been demonstrated against pneumococcal infections in mice. The factor in impure penicillin which enhances the chemotherapeutic activity of crystalline penicillin G is present in the original penicillin fermentation liquor and may be demonstrated during the extraction of penicillin in those fractions in which penicillin G is recovered. The chemotherapeutic activity of crystalline penicillin G may be enhanced by dissimilar substances not specific for impure penicillin. Furthermore, crystalline penicillin K may enhance the activity of crystalline penicillin G. The effect of penicillin G plus K is greater than would be anticipated from the total number of units present. The chemotherapeutic activity of penicillin X, dihydro-F, and at times K may also be enhanced by penicillin impurities.

Journal of Investigative Dermatology, Baltimore

9:63-106 (Aug.) 1947

- Infection of Glabrous Skin Instigated by Fungus *Trichophyton Sul-fureum*: Report of Case. J. C. Slaughter Jr. and E. P. Cawley.—p. 63.
- Treatment of Allergic and Some Other Dermatoses with Thiorphorin: Preliminary Report. Beatrice M. Kesten and C. Sheard Jr.—p. 65.
- Sebaceous Secretion on Human Head. E. O. Butcher and J. P. Parnell.—p. 67.
- Observations on Role of Water in Susceptibility of Human Skin to Injury by Vesicant Vapors. B. Renshaw.—p. 75.
- Experimental Production of Rapidly Fatal Blastomycosis in Mice for Testing Chemotherapeutic Agents. F. R. Heilman.—p. 87.
- Story of a Hair Root. F. Pinkus.—p. 91.
- Local Use of Benadryl Ointment. D. J. Perry.—p. 95.
- *Epidermal Sensitization to Streptomycin: Report of 6 Cases Occurring in 12 Nurses Handling Drug. M. J. Strauss and F. C. Warring Jr.—p. 99.

Sensitization to Streptomycin in Nurses.—Strauss and Warring previously gave histories of 4 nurses in whom contact dermatitis developed from streptomycin. In this communication they present detailed descriptions of these patients and add 2 more cases of sensitization to the same drug. These 6 cases occurred in a group of 12 nurses who came in contact with streptomycin in the course of administering it to patients and rinsing out the syringes. In the first 4 nurses the eruption appeared at intervals varying from one month to three and a half months after the first exposure to the drug. All exhibited positive reactions to patch tests to streptomycin, and in all the eruption disappeared when exposure to the drug was avoided. The possibility that streptomycin in the concentration used is a primary irritant must be dismissed, because it failed to produce a reaction not only in 4 persons who had never been exposed to streptomycin but also in 6 who had had varying degrees of exposure to the agent. The 2 nurses who, although they never had any eruption, exhibited sensitivity to streptomycin on patch testing demonstrate more clearly the potentialities of this drug as a sensitizer.

Journal of Lab. and Clinical Medicine, St. Louis

32:1169-1292 (Oct.) 1947. Partial Index

- Rates of Sodium Turnover in Normal Subjects and in Patients with Congestive Heart Failure. G. Burch, P. Reaser and J. Cronvich.—p. 1169.
- Mannitol: Kinetics of Distribution, Excretion and Utilization in Human Beings. R. Dominguez, A. C. Corcoran and I. H. Page.—p. 1192.
- Studies in Serum Proteins. I. Chemical Estimation of Albumin and of Globulin Fractions in Serum. C. Cohn and W. Q. Wolfson.—p. 1203.
- Sodium and Potassium Determinations in Health and Disease. T. P. Marinis, E. E. Muirhead, Frances Jones and J. M. Hill.—p. 1208.
- Changes in Bone Marrow in Megaloblastic Anemias of Infancy Before and After Folic Acid Therapy. W. W. Zuelzer, Anne Newhall and Lucile Hutaff.—p. 1217.
- Folic Acid Therapy in Nontropical Spruce: Results of Treatment in 7 Cases. J. F. Weir and M. W. Comfort.—p. 1231.
- Urinary Phenols in Pernicious Anemia. Marian E. Swendsen, B. Wandruff and F. H. Bethell.—p. 1242.
- Potency of U. S. P. Reference Standard for Vitamin D. W. Dasler, C. D. Bauer and Martha Van Nostrand.—p. 1251.
- Effect of Tyrosine, Tryptophane and Thiouracil on Melanuria. A. G. White.—p. 1254.
- *Bacteremia and Acute Meningitis Due to *Alcaligenes Faecalis*: Case Report. L. L. Terry, J. K. McBane and Kathryn F. Dean.—p. 1262.

Meningitis Due to *Alcaligenes Faecalis*.—Terry and his associates say that although *Alcaligenes faecalis* is generally considered to be saprophytic and nonpathogenic, it seems that this organism can produce disease. A review of the literature reveals that *A. faecalis* has been associated with a variety of clinical conditions such as rheumatic polyarthritis, hepatitis and appendicitis. The organism has been cultured from gallstones and renal calculi. It has been considered the pathogenic agent in certain types of infant summer diarrhea and the cause of a few cases of adult enterocolitis. There are only 4 cases in the literature in which *A. faecalis* was responsible for meningitis. The case reported herein, that of a seaman aged 42, apparently represents the fifth case of meningitis due to *A. faecalis* to be described. Despite high in vitro resistance of the organism to streptomycin and sulfadiazine individually, the patient recovered under treatment with these two agents combined; synergistic activity may have been present. Preceding infection with, or port of entry for, *A. faecalis* could not be demonstrated. Agglutinins for the organism could not be demonstrated in the blood after recovery.

Military Surgeon, Washington, D. C.

101:271-360 (Oct.) 1947. Partial Index

- Fixed Hospitals Follow Breakthrough to Paris. J. R. Darnall.—p. 271.
- New Solutions to Primary Sanitation Problems in Naval Advanced Bases. R. W. Babione.—p. 281.
- Discussion of Stress and Exhaustion as Primary as Well as Contributing Etiologic Factor in Organic Neurologic Disease. H. von Briesen.—p. 286.
- Vasospasm of Radial Arteries in Schizophrenia: Report of 2 Cases. W. Simon.—p. 290.
- Trichinosis. J. M. Oppenheim, C. R. Whims and A. W. Frisch.—p. 294.
- *Powdered Blood Plasma and Eggwhite Perorally in Therapy of Gastrointestinal Disorders. R. deR. Barondes.—p. 306.
- Application of Physical Standards in Mobilization. J. H. Bornstein.—p. 315.
- Utilization of Medical Administrative Officer in Hospitals. G. W. Malory.—p. 317.

Powdered Blood Plasma and Eggwhite for Gastrointestinal Disorders.—While assigned to a prisoner of war camp, de Rohan Barondes observed that a considerable percentage of the confinees, and troops stationed nearby, complained of various gastrointestinal disorders, gastritis, enteritis, hyperchlorhydria, ulcerous states, diarrhea and the like. Due to insufficiency of proper agents for alkalitherapy at the time, powdered blood plasma was used. Desiccated blood plasma, when given orally, exerted beneficial effects on such gastrointestinal disorders as hyperchlorhydria, gastritis, enteritis, ulcerous and malignant processes and diarrheas. Blood plasma acts as a buffer for gastric acidity, exerts a soothing influence on inflamed and diseased tissues, is a fibrinogenic agent through its plasma globulin content, aids tissue regeneration and possesses antitoxic and antibiotic properties. In addition, it aids in the capacity to fabricate antibodies and increases resistance to infection. The dried plasma is well tolerated when mixed with palatable cool mixtures. Hot fluids are not used as excipients because coagulation of the plasma then readily occurs with loss in its therapeutic properties. An excellent agent for the incorporation of the plasma is apple powder, which is likewise a valuable agent in treatment of gastrointestinal disorders. Blood plasma is superior to the amino acids and protein hydrolysates in quickly combating hypoproteinemia, maintaining nitrogen balance and restoring the electrolyte equilibrium. This would be especially so in the presence of a severely damaged liver. Eggwhite, either fresh or prepared by the high vacuum cold process similar to that used in preparing blood plasma, is effective in ameliorating the symptoms of various gastrointestinal disorders. The desiccated product can be prescribed in enteric-coated capsules or mixed with cool fluids.

New England Journal of Medicine, Boston

237:531-568 (Oct. 9) 1947

- *Streptomycin Therapy in 52 Cases of Bacterial Infection. L. W. Kane and G. E. Foley.—p. 531.
- Medical Motion Pictures in Private Practice. D. W. Leonard.—p. 540.
- Infectious Mononucleosis Complicated by Bilateral Papilloretinal Edema. J. Ashworth and S. A. Motto.—p. 544.
- Serum Lipids and Their Value in Diagnosis. S. J. Thannhauser.—p. 546.
- Myocardial Abscesses of Left Ventricle.—p. 552.
- Sarcoidosis.—p. 555.

Streptomycin Therapy in Bacterial Infection.—Kane and Foley report the results obtained with streptomycin in 52 cases which included infections of the urinary tract, meningitis and epiglottitis due to *Hemophilus influenzae*, bronchiectasis, nonspecific urethritis and 1 case of septicemia caused by *Pseudomonas aeruginosa*. After review of the effects obtained in 38 cases of pyelonephritis and 2 of cystitis due to gram-negative bacilli, the authors say that cure was effected in 30 and improvement in another 4; the remaining 6 were not improved. Cure resulted when the infection was due to a susceptible organism, despite moderate renal damage and the presence of small nonobstructing renal calculi. Patients infected with organisms with in vitro resistance greater than the levels that could be obtained in the urine failed to respond. The acquisition of resistance by the infecting organism was not responsible for the failures. An appreciable increase in resistance was observed in only 1 case. Two of 3 cases of nonspecific urethritis in which only pleuropneumonia-like organisms were isolated responded to streptomycin therapy. Two cases of meningitic influenza also responded to streptomycin. Recovery in 2 cases

of epiglottitis due to *H. influenzae* seemed to be hastened by streptomycin therapy. The favorable outcome in 1 case of septicemia due to *P. aeruginosa* was undoubtedly the result of the prompt use of streptomycin. Of 3 cases of bronchiectasis in which *Escherichia coli* was the predominating organism in the sputum, only 1 showed clinical improvement after combined penicillin and streptomycin aerosol. One patient with pulmonary abscess thought to be due to *H. influenzae* seemed to improve on combined penicillin and streptomycin aerosol. Minor toxic reactions were observed in 15 per cent of cases.

Pennsylvania Medical Journal, Harrisburg

51:2-112 (Oct.) 1947

- Presidential Address. *J. Hess*.—p. 25.
Use of Blood Derivatives in Treatment of Childhood Diseases. *C. A. Janeway*.—p. 31.
Anomalies of Fundus Oculi: Kolachutene Demonstration. *A. J. Bedell*.—p. 40.
Chlorophyll in Treatment of Dermatoses: Report of 40 Cases. *W. D. Langley and W. S. Morgan*.—p. 44.
Pennsylvania Study of Child Health Services of American Academy of Pediatrics. *J. McK. Mitchell*.—p. 49.
Diagnosis and Management of Sterility in Female. *R. E. Nicodemus, L. F. Rittmiller and I. L. Messmore*.—p. 54.
Report of Third State-wide Survey of Acute Appendicitis Mortality (1946). *J. O. Bower and C. P. Freed*.—p. 58.
Effect of Stillbirth on Lactating Breast. *E. Matlin*.—p. 63.

Chlorophyll for Dermatoses.—Langley and Morgan resorted to water soluble chlorophyll when other measures had failed to relieve the subjective symptoms and objective manifestations of dermatoses of varied type. The majority of the 40 cases had proved resistant to all previous treatment. One of the most gratifying results of application of water soluble chlorophyll was its ability to relieve itching and burning. This alleviation was welcomed by the patient, who in many instances became comfortable for the first time in weeks or months. Thirty-six of the 40 patients also obtained objective improvement, whereas 4 did not improve. Thirty-two of the 36 were clinically cured. The authors are unable to explain the mode of action of chlorophyll but suggest that it may provide some factor which inflamed tissues need for healing.

Philippine Medical Association Journal, Manila

23:321-388 (Aug.) 1947

- Cesarean Section in Philippine General Hospital. *H. Acosta-Sison and J. Villanueva*.—p. 321.
On So-Called "Gall Bladder Disease." *J. Estrada and P. T. Nery*.—p. 331.
Statistical Studies on Urolithiasis: I. Chemical Aspects. *I. Lawas*.—p. 335.
Id.: II. Clinical Aspects. *L. F. Torres Jr. and P. M. Recio*.—p. 337.
Non-Calculous Hydronephrosis. *D. Antonio*.—p. 345.
Various Reactions that May Follow Triple Vaccine Inoculation: Preliminary Report. *M. Y. Matias and A. C. Reyes*.—p. 349.

Union Médical du Canada, Montréal

76:1153-1272 (Oct.) 1947

- *Arteriotomy in Arteritis Obliterans in the Old Based on 144 Observations. *R. Leriche*.—p. 1162.
Clinical Aspect of Tuberculosis in France During German Occupation. *R. Kourilsky, M. Fourrestier and J. Regaud*.—p. 1166.
Cancer of Larynx: Early Diagnosis. *V. Latraverse*.—p. 1181.
Sarcoma of Mesentery: Personal Observation. *R. Lauzer*.—p. 1188.
Tuberculous Epiglottitis Simulating Appendicular Abscess. *C. Bisson*.—p. 1191.
Three Cases of Epithelioma of Colon and of Acute Appendicitis. *S. Lauzé*.—p. 1194.
Reflex Pain of Nasal Origin. *O. Frenette*.—p. 1197.
Treatment of Recent Syphilis and Prevention of Congenital Syphilis with Penicillin in Aqueous Solution and in Beeswax-Oil Suspension. *J. Archambault*.—p. 1199.
Penicillin in Congenital Syphilis. *J. Grandbois*.—p. 1207.

Arteriotomy in Arteritis Obliterans.—Leriche treated 144 aged men and women who had arteritis obliterans by arteriotomy. The superficial femoral artery was involved in 90 patients, the deep femoral artery in 22, the external iliac artery in 17, the aorta in 2, the popliteal artery in 15, the posterior tibial artery in 7 and the subclavian, axillary and humeral arteries in 11 patients. Five cases in men between the ages of 64 and 78 years are reported in detail. Permanent results were obtained in about 45 to 50 per cent of the cases. Secondary amputation was required in 27 cases. Failures were

due to the rapid occurrence of dry gangrene. Vasomotor disturbances hastened the appearance of complete ischemia, which had remained below the threshold before the surgical intervention. In spite of these failures and 9 postoperative deaths, arteriotomy may be considered as a benign intervention which suppresses the vasoconstrictive pathologic arterioarterial reflexes and which produces changes in the peripheral circulatory system. It checks the progress of the thrombosis which is the cause of continuous aggravation. Arteriography may be of considerable aid in the decision favoring arteriotomy or amputation. Arteriotomy may be performed under local anesthesia. It should be extensive and 15 to 25 cm. of the superficial femoral artery should be removed. Lumbar ganglionectomy was combined with arteriotomy in 9 of the author's cases. This combined treatment may increase the chance of success provided that the general condition does not contraindicate the intervention.

United States Naval Med. Bulletin, Washington, D. C.

47:777-936 (Oct.) 1947. Partial Index

- Care of Dependents in Navy. *M. D. Willcutts*.—p. 777.
Vagotomy in Treatment of Peptic Ulcers. *E. S. Lowe*.—p. 785.
Penicillin in Treatment of Gonococcus Infection of Urethra: Report of 300 Cases. *A. L. Lawler*.—p. 796.
Local Penicillin Therapy for Tropical Ulcer. *C. F. Gutch*.—p. 801.
Rheumatic Fever in the Negro. *J. M. Vesey*.—p. 805.
*Benadryl as Therapeutic Agent in Treatment of Common Cold. *J. M. Brewster*.—p. 810.
Clinical Report of Use of Benadryl in 100 Cases. *E. E. Barksdale and W. K. Hall*.—p. 822.
Incidence of Palpable Lymph Nodes. *W. W. Moorman*.—p. 821.
Intradermal Tests with *Dirofilaria immitis* Extract in Human Filariasis. *M. Zelig*.—p. 824.
Statistical Review of 1,000 Orthopedic Consultations at Naval Dispensary. *R. F. Legge*.—p. 827.
Psychiatric Data Compiled at United States Naval Personnel Separation Center. *R. S. Schwab*.—p. 830.
Laboratory Examinations for Tuberculosis. *Wylma F. Funk*.—p. 835.
Diagnosis of Combat Fatigue. *P. Solomon*.—p. 850.

"Benadryl" for the Common Cold.—Brewster used diphenhydramine hydrochloride ("benadryl hydrochloride" N. N. R.) experimentally in the treatment of about 100 cases of the common cold. It has been found to completely abort 10 per cent of such cases and to shorten the course and afford subjective relief to the patient in 95 per cent of all cases. This is due to its inhibiting effect on the serous discharge from the mucous membrane of the upper part of the respiratory tract and its soporific effect. It inhibits the cough reflex, especially in children, probably because it eliminates postnasal drip. It aborts fever blisters.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

55:525-572 (Oct.) 1947

- Results of Three Five-Year Studies of Hydatid Mole and Chorionepithelioma on Pacific Coast. *A. W. Holman and Elizabeth H. Schirmer*.—p. 525.
Traditions in Surgery. *A. S. Jackson*.—p. 538.
Use and Abuse of Pessaries. *G. F. Melody*.—p. 544.
Postspinal Headache: Etiology and Prophylaxis. *A. A. Raney and R. B. Raney*.—p. 550.

Wisconsin Medical Journal, Madison

46:861-992 (Sept.) 1947

- Malaria as Surgical Problem. *J. J. Satory*.—p. 881.
Management of Respiratory Embarrassment in Poliomyelitis. *M. J. Fox and D. D. Sander*.—p. 885.
Management of Neurotic Veteran. *E. P. Roemer*.—p. 895.
Syndrome of Intervertebral Disk. *T. C. Erickson*.—p. 898.
Report of 54 Cases of Tetanus Complicating War Wounds. *S. B. Harper*.—p. 900.

46:993-1076 (Oct.) 1947

- Trausthoracic Esophagostomy: Report of 2 Cases. *R. I. Hiller*.—p. 1011.
Myocardial Insufficiency (Including Congestive Heart Failure): Its Early Evidence and Use of a Low Sodium Intake in Its Treatment. *P. D. White*.—p. 1015.
Present Status in Treatment of Perforated Appendix. *C. F. Conroy*.—p. 1017.
Antibiotics in Surgery. *A. A. Schaefer*.—p. 1020.
Burns in Naval Personnel at Okinawa. *H. W. Christensen*.—p. 1022.
Diagnosis and Treatment of Common Anorectal Complaints. *J. P. Nes-selrod*.—p. 1024.
Fundamental Principles in Treatment of Traumatic Wounds. *F. Raine*.—p. 1026.
Use and Abuse of Estrogen. *R. S. Cron and J. A. Klieger*.—p. 1029.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:477-516 (Sept. 27) 1947

- Hematemesis and Melena: With Special Reference to Bleeding Peptic Ulcer. F. A. Jones.—p. 477.
Rheumatoid Arthritis and Amyloid Disease: Report of a Case. W. Yeoman and J. V. Wilson.—p. 483.
Congenital Defect of Left Diaphragm with Volvulus of Stomach and Transposition of Viscera. E. Owen-Lloyd and D. Roberts.—p. 485.
Miliary Appearances in Lungs in Mitral Stenosis: Endogenous Pulmonary Hemosiderosis. T. E. Gumpert.—p. 488.
Case of Pineal Cyst. S. Sevvit and J. Schorstein.—p. 490.
Amyoplasia Congenita Associated with Hyperostosis Frontalis Interna. R. N. Herson.—p. 491.
Tuberculosis of Great Trochanter. B. McMurray.—p. 492.
*Acute Interstitial Polymyositis Treated with Penicillin. I. Friedmann and F. Por.—p. 494.

Penicillin in Acute Interstitial Polymyositis.—Friedmann and Por report the case of a woman, aged 42, in whom a sudden chill was followed by pain and swelling of all the limbs. When she was hospitalized ten days later all her limbs were greatly enlarged. The muscles appeared hypertrophied and were tender, and some of them were transformed into large lumps, especially the right sternocleidomastoid, both biceps, both brachioradialis and the upper parts of the abdominal recti. The evening temperature was 102 F. The patient remembered that she had eaten pork, and, although the number of eosinophils was not high enough for trichinosis and there were no swellings of the face and eyelids, a tentative diagnosis of trichinosis was made. A biopsy specimen was taken from the right sternocleidomastoid. The normal muscle tissue was largely replaced by a cellular inflammatory infiltrate consisting mainly of leukocytes, many of them eosinophils. The widely separated muscle fibers had partly lost their striation and had undergone waxy degeneration. Trichinae were not found. The histologic diagnosis was acute interstitial eosinophilic polymyositis. On the twenty-first day of illness treatment with penicillin was instituted, and after six days the temperature dropped to normal and remained so. The swellings were diminishing and the general condition showed great improvement. After receiving 1,500,000 units of penicillin the woman felt so well that she was discharged. She has been well and healthy since.

2:517-558 (Oct. 4) 1947

- Air-Borne Infection. R. J. V. Pulvertaft.—p. 517.
British Anti-Lewisite: Report on its Use and Therapeutic Value in Arsenical Intoxications, from BAL Conference, Medical Research Council. R. A. Peters and others.—p. 520.
Manic States in Far East. R. F. Tredgold.—p. 522.
Homosexual Offences and Their Relation to Psychotherapy. F. H. Taylor.—p. 525.
*Sudden Death After Intravenous Injection of a Mercurial Diuretic. A. G. Oettlé.—p. 530.

Sudden Death From Injection of Mercurial Diuretic.—Oettlé says that sudden death may follow directly on the intravenous injection of an organic mercurial and reports a case to illustrate this. Presumably death was due to ventricular fibrillation. Treatment should consist of intracardiac epinephrine and sodium thiosulfate. To prevent such sequelae mercurial diuretics should never be given by the intravenous route. The addition of magnesium sulfate to the solution for injection promises to lower its toxicity considerably.

Glasgow Medical Journal

28:237-312 (Sept.) 1947

- *Iron-Staining Erythrocytic Inclusions with Special Reference to Acquired Hemolytic Anemia. A. J. S. McFadzean and L. J. Davis.—p. 237.

Erythrocytic Inclusions in Hemolytic Anemia.—Bodies resembling those described by Pappenheimer in 1945 were studied by McFadzean and Davis in a variety of hematologic conditions. These bodies occur within erythrocytes and their hemoglobinated precursors, both in the peripheral blood and in the bone marrow. They give a positive iron reaction and stain with Leishman, methyl blue, pyronine and a number of other stains but fail to do so with specific nuclear stains, namely, hematoxylin and methyl green. Seven cases of acquired idio-

pathic hemolytic anemia were described with special reference to the incidence of inclusion bodies. Before splenectomy, which was performed in 6 of the cases, these bodies were numerous in the sternal marrow but relatively scanty in the peripheral blood. Shortly after splenectomy the incidence in the bone marrow was unchanged but the number of red cells containing inclusion bodies in the peripheral blood underwent a dramatic increase, which was commensurate with the rise in the total red cell count. It is suggested that the red cells containing the inclusion bodies may normally be removed by the spleen and that the mechanism responsible for the inclusion bodies may constitute a major etiologic factor in acquired hemolytic anemia. Similar inclusion bodies have been found in the peripheral blood and sternal marrow in a variety of hematologic disorders, but their incidence never approached the high figures seen in acquired hemolytic anemia. The inclusion bodies differ from the granules of siderocytes but appear to be related to the basophilic stippling of lead poisoning. The nature of the inclusion bodies is unknown, but it is suggested that they develop as the result of interference with hemoglobin anabolism.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

54:417-576 (Aug.) 1947

- Sedation with Rectal Tri-brom-ethanol (Avertin, Bromethol) in Management of Eclampsia. J. B. Dewar and W. I. C. Morris.—p. 417.
*Excretion of Drugs in Human Milk: A Review. N. Sapeika.—p. 426.
Calcium and Phosphorus Metabolism in Pregnancy: Survey Under War and Post-War Conditions. E. Obermer.—p. 432.
Studies in Prematurity, Stillbirth and Neonatal Death: II. Delivery and Its Hazards. Cecil Mary Drilling.—p. 443.
Further Contribution to Study of Influence of Failure of Müllerian Duct Fusion on Pregnancy and Labour. S. Way.—p. 469.
Angular Pregnancy at Term Complicated by Constriction Ring. J. T. Louw.—p. 477.
Effect of Methyl-Ergometrine on Human Puerperal Uterus. R. C. Gill.—p. 482.
Antenatal and Postnatal Care of Erythroblastotic Infant. C. C. Bowley.—p. 489.
Pregnancy After Menopause: Case Report and Review of Literature. L. Snaith.—p. 496.
Etiology of Congenital Torticollis and Certain Associated Deformities, with Suggestion for Prophylaxis. G. P. Charlewood.—p. 499.
Treatment of Intractable Cases of Essential Pruritus Vulvae. A. Horn.—p. 504.
Dicephalic Monster. S. Nowell and R. Owen-Jones.—p. 507.
Hemorrhagic Disease of the Unborn. Joyce Morgan.—p. 510.

Excretion of Drugs in Human Milk.—Sapeika reports that many of the observations described by Reed in a review published in 1908 still hold good. The fact that it is practically never necessary to remove the child from the breast when the mother is receiving drug therapy is borne out by the rarity of cases of untoward reactions reported in the literature. Another important point that still holds is that it is rarely if ever desirable to treat a child with drugs given to the mother. Reed concluded that alcohol, opium, chloroform, ether, thyroid and lead are to be used with care, and that atropine, antipyrine, phenacetin, chloralhydrate, arsenic, bismuth, mercury or copper compounds, castor oil, senna, quinine, bromides, iodides, salicylic acid and copaiba pass into the milk in small quantities. In his review of reports that have appeared since 1908, Sapeika says that unusually large quantities of alcohol or chloroform have been known to influence the nursing. Excretion of barbiturate into breast milk has been demonstrated, but the amount is generally too small to affect the infant. It is known that bromides may cause cutaneous eruptions in infants. With regard to morphine the author states that alkaloid has not been found in the milk of an addict taking 20 grains (1.29 Gm.) of morphine sulfate daily, while in a normal woman given 16 mg. of this drug, a trace may have been present in the milk seven and one-half hours later. A decrease in milk secretion has been noted as the result of excessive smoking by the mother, and nicotine has been detected in breast milk. Nicotine intoxication in factories or from excessive smoking may affect the mother and also the child. Although minute quantities of conjugated phenolphthalein may be found in breast milk, no obvious effect on the bowel movements occurred in the infants of mothers taking phenolphthalein. The active constituent of senna, cascara or rhubarb may produce purgation in the suckling. Sulfonamide compounds have been observed to reach higher levels in the milk than in the blood, but the amount ingested by the infant is too small to be dangerous.

Medical Journal of Australia, Sydney

2:321-348 (Sept. 13) 1947

- Some Problems of Anesthesia in 1947. G. Kaye.—p. 321.
Investigation of Liver Function in Normal Pregnancy and in Late Toxemias of Pregnancy. E. M. A. Day and A. L. Hellestrand.—p. 326.
Need for a Medical Liaison Officer in Peace and War. S. Goulston.—p. 329.

*Diagnosis of Hysterical Convulsions. D. Cappon.—p. 332.

Diagnosis of Hysterical Convulsions.—According to Cappon differentiation of hysterical motor convulsions from epilepsy may prove difficult. Undesirable results may ensue if epilepsy is not correctly recognized. In the absence of facilities for electroencephalography, the "pitressin" hydration test may be found useful.

Thorax, London

2:121-168 (Sept.) 1947

- *Coarctation of Aorta. C. Crafoord, B. Ejrup and H. Gladnikoff.—p. 121.
Primary Carcinoma of Trachea. P. Ellman and H. Whittaker.—p. 153.
Intra-Thoracic Lipomata. J. Smart and V. C. Thompson.—p. 163.

Coarctation of Aorta.—Crafoord and his associates thought that in patients with congenital isthmus stenosis, who already had a satisfactorily functioning collateral arterial system, it would be possible to keep the aorta closed at a point immediately peripheral to the left subclavian artery for longer than twenty-seven minutes without endangering the patient. They describe the surgical technic used by Crafoord to remove the stenotic part of the aorta and to restore continuity by end to end anastomosis. Fifteen patients have been subjected to this operation, with good results in 11. Two patients died as the result of the operation, and in 2 others the coarctation could not be removed. The authors stress the importance of oscillographic studies in coarctation. The roentgenologic changes which are pathognomonic are (1) widening of the left subclavian artery, which is visible as (a) an S-curved outline of the left border of the superior mediastinum, (b) an impression on the esophagus, (c) an indentation of the left border of the posterior mediastinum and (d) a modification of the impression of the aortic arch on the esophagus; (2) discrepancy between the increased pulsations in the left subclavian artery and the decreased pulsations in the adjacent part of the descending aorta. Inconstant changes are widening of the costal sulci, shortening of the aorta, widening of the innominate artery and enlargement of the left auricle.

Acta Obstet. et Gynec. Scandinavica, Stockholm

27:249-338 (Nov. 3) 1947. Partial Index

- Endometritis Tuberculosis. B. Eriksen.—p. 249.
*Fatal Staphylococcal Poisoning of Breast-Fed Infant Whose Mother Suffered from Staphylococcal Mastitis. L. Selberg.—p. 275.
*Genital Tuberculosis with Tubercle Bacilli in Menstrual Blood. Source of Infection of Primary Genital Tuberculosis in a Man. N. Clemetsen.—p. 284.
Treatment of Metropathia Haemorrhagica: Suggestions for Therapeutic Program. B. Falconer.—p. 288.
Occurrence of Enterococci in Vagina. H. Perli.—p. 301.

Fatal Staphylococcal Poisoning of Infant in Maternal Mastitis.—A woman aged 23 was hospitalized two months after confinement on account of mastitis. The breast had become painful, red and tender two weeks previously, but she had continued to nurse her baby until two days before she came to the hospital. Incision of the breast exposed a cavity filled with pus which yielded *Staphylococcus aureus*. The infant was found to be thin, exhausted and with poor turgor and tone. Although the infant's temperature was normal on admission, it suddenly became febrile and there were several green, loose and mucous stools. Enteritis was diagnosed and sulfaguanidine was given, but the infant died. At necropsy cultures of the intestinal contents yielded mainly *Staph. aureus*. An examination of nine strains of staphylococci obtained from cases of puerperal mastitis showed that six of them were enterotoxic. In most cases of mastitis pain prevents breast-feeding, but in a few cases it is continued. Selberg thinks that when an infant is feeble, when its nutritional state is poor and when its resistance is low, breast feeding should be discouraged at the slightest sign of mastitis.

Genital Tuberculosis.—Clemetsen reports the case of a woman, aged 29, who requested treatment for sterility. A laparotomy was performed and disclosed considerable changes around the internal genitalia, with dense adhesions and thickening of both tubes. On the right side the tube and the ovary formed a solid inflammatory tumor, which was removed. The left ovary was normal and was left intact. On histologic examination the removed tube presented tuberculosis. About eight months after the operation there developed a tuberculous ulcer on the penis of the husband of this woman. On the assumption that the uterine endometrium of the wife contained tubercle bacilli, the menstrual blood was examined and yielded tubercle bacilli on Löwenstein's medium.

Giornale di Clinica Medica, Parma

28:337-394 (July) 1947. Partial Index

- *Diet in Pathogenesis and in Therapy of Liver Diseases. L. Ponticaccia.—p. 337.
Fatal Agranulocytic Syndrome Due to Administration of Marenin in Therapy of Undulant Fever. C. Pirastu.—p. 346.

Diet in Pathogenesis and Therapy of Liver Disease.—The author gives the histories of 80 patients with acute or subacute disease of the liver due to intravenous injections of arsenicals or other drugs. In the acute cases there were jaundice, fever, ascites, general intoxication and enlargement of the liver and the spleen; in some cases, pleurisy and progressive loss of weight. The feces were acholic in some acute cases. Treatment with liver extracts, blood transfusions and intravenous administration of dextrose solution with patients on hypoproteic diet failed. Complete recovery without recurrence was obtained in all cases on a diet rich in protein.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:2561-2636 (Sept. 13) 1947. Partial Index

- "Competition" of AB, MN and Rh Antigens and Its Clinical Significance. L. de Kromme and L. A. M. van der Spek.—p. 2568.
*Eosinophilic Granuloma of Bone and Its Relation to Hand-Schüller-Christian's Disease and to Abt-Siwe-Letterer's Disease. J. Bartels.—p. 2578.

Eosinophilic Granuloma of Bone.—Bartels describes the histories of 2 boys, aged 5 and 6 years, respectively, with solitary eosinophilic granuloma of the cranium. Both patients were operated on and one also received roentgen treatment. The author discusses eosinophilic granuloma of bone, Schüller-Christian's disease and Abt-Siwe-Letterer's disease and the possible relationship of these three entities. In a boy, aged 2 years, whose case is presented in detail, all three entities were present. The author concludes that his observations confirm the idea of some investigators that the three disorders are variants of a single disease entity, Abt-Siwe-Letterer's disease being the severest of the three.

Nordisk Medicin, Gothenburg

35:1651-1690 (Aug. 8) 1947. Partial Index

- Duodenal Cancer. K. E. Jensen.—p. 1651.

Hospitalstidende

- Fifty-Seven Cases of Inveterate Lupus Treated with Calciferol. S. Lomholt.—p. 1659.
Syringomyelia and Dysostosis of Cervical Column. K. H. Krabbe.—p. 1664.
Quincke's Edema. O. Martinsen-Larsen.—p. 1665.
Sinus Caroticus Syndrome in Neurologic Clinic. T. Dalsgaard-Nielsen.—p. 1666.

Hygiea

- *Clinical Factors Disposing to Postoperative Thrombosis in Gynecologic Patients. Elisabet Weltman and P. Wetterdal.—p. 1669.

Postoperative Thrombosis in Gynecologic Patients.—Weltman and Wetterdal's study of 142 cases of thrombosis after gynecologic operation and 480 cases without thrombosis after operation shows a greater tendency to thrombosis after operative intervention for myoma, prolapse and salpingitis and in patients with fever and increased blood sedimentation rates. Patients with cardiac weakness and with a history of thrombosis are especially liable to thrombosis after operation. Increased predisposition to thrombosis because of adiposity,

anemia and high blood pressure or age was not demonstrable, nor was thrombosis found to be more likely to occur after several pregnancies or after longer confinement to bed before operation.

Presse Médicale, Paris

55:609-620 (Sept. 20) 1947

Macroscopic Anatomy of Cancer of Esophagus: Study of Surgical Specimens. P. Gauthier-Villars and A. Dontzoff.—p. 609.

*Diabetes Mellitus Caused by Trauma to the Trunk. P. Louyot, Girault, S. Hadot and Arnoux.—p. 610.

*Experimental Study of Therapeutic Activity of Streptomycin in Tuberculosis. C. Levaditi and A. Vaisman.—p. 611.

Traumatic Diabetes Mellitus.—Louyot and his co-workers report 1 case of traumatic diabetes mellitus in a factory worker aged 48. In the course of his work the man stumbled over a cable and sustained a violent dorsolumbar and abdominal trauma. One month later diabetes mellitus was manifested by loss in weight, generalized edema and a neurologic syndrome characterized by the abolition of the cutaneous and tendon reflexes. Insulin treatment was instituted, combined with prolonged administration of vitamin B₁ and a course of trans-pancreatic short waves. Six months after the accident the polydipsia, polyuria and edema disappeared suddenly, while the carbohydrate intolerance still persisted. The neurologic symptoms subsided slowly. Several months before the accident the workman had submitted to a thorough check-up and was observed to be normal in every regard; the violent trauma and the rapid occurrence of diabetes supported the diagnosis of traumatic diabetes. The disappearance of the polyneuritic syndrome although the diabetes still persisted suggests that the first was not of diabetic origin but that both were sequels of the trauma. While traumatic diabetes is in general grave, resulting in death from pancreatic lesions in two-thirds of the cases, recovery may occur in exceptional cases and is then associated with carbohydrate intolerance. The stabilization at this rate requires several months. From the medicolegal point of view, traumatic diabetes, because of its important social and therapeutic consequences, entitles one to liberal compensation.

Streptomycin in Tuberculosis.—Levaditi and Vaisman inoculated mice with 1 mg. of Koch's bacillus (*Mycobacterium tuberculosis*). In the first series of experiments 24 mice received 1,000 units of streptomycin daily and 17 mice served as controls. In this series treatment was started simultaneously with the inoculation. In the second series 80 mice were given first 1,000 units and then 2,000 units of streptomycin, with 37 mice serving as controls. In this series treatment of 40 mice was started simultaneously with the inoculation and another 40 mice were inoculated twelve days before treatment was started. These experiments demonstrated that streptomycin is one of the most effective agents for the treatment of experimental tuberculosis in mice. It does not completely destroy the tubercle bacilli but limits itself to checking their multiplication. In the battle between the microbes which are in the stage of bacteriostasis and partial bacteriolysis, and the defense power of the organism, the latter prevails over the former. The germs ingested by the phagocytes undergo involutional alterations. At the same time the tissue lesions present a cicatrization capable of opposing the invasion by the bacteria. There is no radical sterilization; in spite of the prolonged survival of the mice, their lungs continue to be virulent to guinea pigs. Discontinuation of the treatment is often followed by grave recurrences. The identity of the conclusions drawn from these experimental results and those reached from clinical observations in men is striking.

Revista Clínica Española, Madrid

26:225-304 (Aug. 31) 1947. Partial Index

*Madrid Symptomatic Complex: Paresthesia of Legs and Burning Feet. M. Peraita.—p. 225.

Madrid Symptomatic Complex.—In 1941 Peraita wrote his book "Avitaminosis y sistema nervioso," in which he described a syndrome of paresthesia of the legs and burning feet in 66 patients. The syndrome was a result of the lack of proper food during the civil war in Spain (1936-1939). The

etiology was unknown, but at the present time and through similar reports in the literature it is known that the disease is caused by lack of the vitamin B₂ complex and controllable by its administration.

Revista de Psiquiatría, Santiago

11:51-126 (No. 2) 1946. Partial Index

*Rh Factor Blood Incompatibility and Mental Diseases. M. F. Beca.—p. 51.

Rh Factor Blood Incompatibility.—According to Beca, 9 of 11 patients with encephalopathies due to erythroblastosis with kernicterus reported in the literature showed the Vogt syndrome, whereas 2 did not exhibit neurologic symptoms. Instances of mental defect in a child due to incompatibility of the Rh factor in his and his mother's blood, without neurologic symptoms, have also been reported. Isoimmunization of the mother to the Rh blood factor plays an important role in the production of oligophrenia with or without the neurologic sequels of kernicterus. Rh blood incompatibility is frequently the causal factor of oligophrenia of unknown origin. There are certain cases of well verified incompatibility (the mother with Rh negative blood and the child with Rh positive blood) in which erythroblastosis with acute jaundice is followed by recovery of the patient without mental and neurologic symptoms. The fact is explained by a lack of lability on the part of the neurons to degenerate. Nervous constitutional lability accounts for erythroblastic degeneration, whereas diffuse cortical lesions and subarachnoid hemorrhages are the result of nervous lesions which produce oligophrenia. Erythroblastic lesions predominate in the gray nuclei at the base of the brain, but they diffuse also in the forms of cortical atrophy and subarachnoid hemorrhages.

Ztschr. f. Vit.-Hor.- & Fermentforschung, Vienna

1:1-216 (Aug.) 1947. Partial Index

Problems of Nomenclature. E. Abderhalden.—p. 8.

Studies on Behavior of Histidine-Anhydride, Histidyl-Histidine and Carnosin Against Ferments. E. Abderhalden and A. Parschin.—p. 11.

Defense Ferment Reactions Against Bacterial Toxins (Tuberculin and Diphtheria Toxin). R. Merten and W. Jäger.—p. 27.

Production of Thiamin Avitaminosis in Pigeons and Rats by Means of Thiaminase. E. Abderhalden.—p. 55.

*Hormone Effects of Vernix Caseosa. L. Lajos and F. Szontágh.—p. 81.

*Thiamin Content of Human Milk. J. Sós.—p. 111.

Hormone Effects of Vernix Caseosa.—Lajos and Szontágh say that the development of the newborn is more favorable if the vernix caseosa is not immediately removed. The similarity of effects of vernix caseosa and of estrogenic hormone treatment suggested that the vernix may contain hormones. To ascertain this, the authors made animal experiments which revealed that the subcutaneous injection of vernix caseosa is followed in infantile ovariectomized rats by full estrus. Similar results could be obtained by inunction of vernix into the skin. Vernix caseosa is absorbed readily by the skin. Vernix caseosa tested on the ovaries of infantile mice lacked gonadotropic effect; the uteri showed changes identical with those produced by large doses of estrogen. It is concluded that vernix caseosa contains a fairly large amount of estrogen.

Thiamin Content of Human Milk.—Sós reports that at his institute assays have been made on the vitamin B₁ (thiamin) content of the milk of 102 mothers, 38 of whom had inadequate protein and fat intake. The average thiamin content was 11 micrograms per hundred cubic centimeters, but the surprising fact was that the milk of the undernourished group had a higher vitamin B₁ content than that of the well nourished group. The higher vitamin B₁ content of the poorly nourished group was not explained by their smaller amount of milk, and although the vitamin B₁ content is generally higher during the first three months after delivery than later, the concentration does not closely depend on the period that has elapsed since childbirth. The time of day at which the assay sample is withdrawn and the specific gravity of the milk likewise seem to be of no great importance as regards the thiamin content. Studies on infants up to 6 months of age suggest that the thiamin content of human milk does not completely cover the requirements of infants and that other sources are needed.

Book Notices

Skin Manifestations of Internal Disorders (Dermadromes). By Kurt Wiener, M.D., Dermatologist, Mount Sinai Hospital, Milwaukee, Wis. Cloth. Price, \$12.50. Pp. 690, with 392 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1947.

A great deal of effort has gone into the writing of this book, for there are some 3,000 references cited, many from journals not easily accessible. The result is an excellent, informative book, skillfully written to preserve the proper balance between the systemic symptoms and the dermadromes, a name coined by the author and intended to signify the cutaneous part of a syndrome. This is the first current book of any length on the subject (another just released by Behrman is in brief handbook form), and it is said to be the first one in the English language since 1906.

The book has many praiseworthy features. The descriptions of the various syndromes are concise and clearly written; the references appear in full title on the bottom of each page; both established facts and controversial matters are presented; the illustrations are numerous and well selected. The forty-three chapters cover a wide field. The subject matter includes practical and experimental phases of metastatic infections, "id" reactions and a large group of systemic infections including the exanthems. There are chapters devoted to the mycoses, virus diseases, rickettsial diseases and diseases of the circulation, kidneys, endocrines, metabolism, pregnancy and blood-forming organs and many rare and tropical diseases.

The author obviously intended to cover the field in a complete manner, and he did a commendable job. Unfortunately, histoplasmosis does not appear among the mycoses or in the index, and there is no mention made of diphtheritic ulcers. However, the book is unusual and merits high recommendation. It contains an amazing amount of information and should be useful to both practitioners and dermatologists.

Le diabète et sa pathogénie. Par L. Ambard, avec la collaboration de Mlle. S. Trautmann et de M. D. Kuhlmann. Paper. Price, 240 francs. Pp. 162, with 17 illustrations. Masson & Cie, 120 Boulevard Saint-Germain, Paris 6^e, 1946.

Professor Ambard's monograph illustrates the famine of current scientific literature in war-torn countries.

It would be desirable if this eminent author could write a second edition based on the new work in diabetes. He could appreciate and thoroughly evaluate (1) the contributions of Cori; (2) the part played by hexokinase; (3) experimental production of diabetes by the creation of hyperglycemia announced by Dohan and Lukens; (4) contributions of Stadie and Stetten to fat metabolism and to the knowledge of the conversion of carbohydrates to fat; (5) use of isotopes in intermediate carbohydrate metabolism; (6) disappearance of diabetic coma and the importance of truly large amounts of insulin in the first few hours of treatment; (7) replacement of coma as a cause of death by arteriosclerosis in its various forms, and (8) discovery of alloxan diabetes.

This author would be the first to build on these developments. All would welcome a second edition in which he could review the recent work done throughout the world.

Endocrinology of Neoplastic Diseases: A Symposium by Eighteen Authors. Editors: Gray H. Twombly, M.D., and George T. Pack, M.D. Cloth. Price, \$11. Pp. 392, with illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1947.

Evidence that hormones affect the abnormal as well as the normal metabolism of the cell necessitates a comprehensive review of the relationship of hormones to neoplastic disease. Drs. Twombly and Pack have enlisted the aid of eighteen experts in the preparation of this monograph. Material on which this monograph is based first appeared in *Surgery*, July and August 1944. These articles have since been thoroughly revised and brought up to date as of August 1946.

The book is divided into three parts: The first part deals with experimental tumors induced by steroid hormones; particular attention is paid to tumors developing in the genital tract. Discussion of evidence regarding effects of continued use of

female sex hormones on subsequent development of neoplastic disease in human beings is of interest. The conclusion is reached that although under special conditions in animals it is possible to increase the incidence of such tumors it has not been demonstrated that these results are applicable to human beings.

The second part of the book deals with effects of tumors of endocrine glands. This part is well illustrated and contains digests of the original case histories from which the classical descriptions of these diseases were taken. Particular attention is paid to pituitary and adrenal tumors.

The third part of the book deals with absorbing and little understood effects of hormones on neoplastic diseases. Special attention is focused on effects of estrogens on prostatic tumors and of estrogens and androgens on cancer of the breast, particularly the bony metastases.

The book has not been arranged in the order discussed but in accordance with the glands involved. This may be a useful arrangement for the endocrinologist, but the value of this monograph extends beyond the field of endocrinology. For those interested in problems of cellular growth in neoplastic diseases and those who seek general information on this fascinating subject, another arrangement of the material might be more logical and informative.

L'Infezione brucellare nell'uomo. Dal Prof. Dott. Saverio Signorelli, Libero docente e assistente di patologia speciale medica e metodologia clinica nella R. Università di Napoli, Napoli. Prefazione del Prof. Giovanni di Guglielmo. Paper. Price, 300 lire. Pp. 327, with 43 illustrations. Casa Editrice Libreria Vittorio Idelson, Via E. De Marinis, 19, Naples, 1941.

"L'Infezione Brucellare nell' Uomo," the author explains, is a complete treatise on brucellosis. The book is the result of years of experience with excellent clinical material. The author offers the manual to those interested in brucellosis and discusses its relationship to each of them.

This monograph is timely because, as Huddleson has recently observed, in America in spite of radical measures to suppress bovine brucellosis the infection is still prevalent.

The manual is a complete treatise dealing with the various aspects of brucellosis—historical, etiologic, pathologic, serologic, immunologic and clinical. An English translation of this manual would be an invaluable aid to the veterinarian, physician and others who feel the need for further information concerning brucellosis.

Veterinary Bacteriology. By Ival Arthur Merchant, D.V.M., Ph.D., C.P.H., Professor of Veterinary Bacteriology and Head of the Department of Veterinary Hygiene, Division of Veterinary Medicine, Iowa State College, Ames. Third edition. Cloth. Price, \$7. Pp. 683, with 137 illustrations. The Iowa State College Press, Ames, Iowa, 1946.

Veterinary bacteriology is related so closely to medical bacteriology that the two groups overlap. For this reason the author has included such human pathogens as the typhoid bacillus, the gonococcus and other forms. The book has been brought up to date, and a chapter on antibiotics has been added. Chapters on protozoa and milk analysis have been omitted, because those subjects are otherwise included in the curriculum at Iowa State College.

The material is presented clearly, illustrations are good, and each chapter has adequate references. It is a good book on bacteriology.

Medical Care and Costs in Relation to Family Income: A Statistical Source Book. Selected and compiled by Helen Hollingsworth, Margaret C. Klem and Anna Mae Baney. Federal Security Agency, Social Security Administration, Bureau of Research and Statistics, Bureau Memorandum No. 51. Second edition. Paper. Price, \$1.25. Pp. 349. Washington, D. C.: Supt. of Doc., Government Printing Office, 1947.

This statistical material was selected and compiled to further the cause espoused by the Social Security Administration in its official recommendations: compulsory national health insurance. Users of this memorandum may check the source neatly printed at the bottom of each table and then consult the description of the source in the early pages of the memorandum; thus one may form an opinion of the value of the data from the value of the source. The memorandum is an invaluable source of statistical material for researchers in medical economics and allied fields.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TUBERCULOSIS

To the Editor:—Approximately what percentage of patients with minimal tuberculosis have a positive sputum at some time during the course of their disease? What is the approximate percentage in the moderately advanced and far advanced groups? After examining the tuberculous patient, what is the best method for cleansing the hands and articles used in the examination? Does washing in green soap and water solution kill the bacilli and is sponging with alcohol a sure method? Do you think face masks are much protection, particularly the loose woven types? How much higher percentage of physicians working in sanatoriums develop tuberculosis than those in other types of practice.

Clyde Alley Jr., M.D., Portsmouth, Va.

ANSWER.—Unless tubercle bacilli can be recovered through the sputum or gastric washings, it is impossible to determine that a demonstrable pulmonary lesion, whether minimal or advanced, is tuberculous. If the patient reacts to tuberculin, the lesion may be tuberculous. However, nontuberculous pulmonary disease is as likely to develop in the lungs of tuberculin reactors as in nonreactors. Stiehm found tubercle bacilli in the gastric washings of about 70 per cent of persons who had minimal lesions that might be due to tuberculosis. A definite diagnosis could not be made in the remaining 30 per cent, although it was presumed that they represented tuberculous processes because they were in young people who reacted to tuberculin, and the x-ray shadows persisted over at least a period of months.

Most persons with minimal chronic tuberculous lesions have no cough or expectoration for weeks, or even months, in the early development of the disease. It is only those which progress so as to result in the destruction of tissues in whom such symptoms and positive sputum appear. In some of the others the lesions may completely resolve; those in still others fibrose and always remain minimal in extent. Therefore, when a minimal lesion is present on first examination, the physician has first to determine whether it is tuberculous and, if so, whether it has been well controlled by nature or is progressive.

Nearly all persons in whom the disease progresses to moderately or far advanced stages have tubercle bacilli in the sputum or gastric washings at some time. Even these lesions may become so well controlled by the natural defense mechanism that they do not eliminate tubercle bacilli that can be found in the gastric washings or sputum. Failure to find tubercle bacilli in such cases does not mean that the lesions are nontuberculous if the patient reacts to tuberculin. It has been found that the sputum may contain a thousand or more (estimated as high as a hundred thousand) tubercle bacilli per cubic centimeter without having them found by the usual methods of sputum examination. Therefore one should always resort to cultures, and preferably animal inoculations, before stating that tubercle bacilli are not present in the sputum or gastric washings.

Careful washing of the hands and various articles in green soap and water solution and sponging with alcohol does not constitute a sure method of killing tubercle bacilli. However, this is probably adequate if carefully done, as most of the bacilli are removed from the surface of the skin. The time during which soap and alcohol remain on the skin is not adequate to destroy the organism. In absolute alcohol tubercle bacilli die in five minutes, and 5 per cent phenol (carbolic acid) requires the same time to kill them. One per cent tricresol or 2 per cent saponated solution of cresol are effective germicides, but from several minutes to an hour is required to destroy tubercle bacilli.

While the usual face mask may not afford absolute protection, there can be no doubt that when properly used it definitely reduces the number of tubercle bacilli which enter the air and are deposited on the bedding and other objects in the vicinity of the patient. In some places where serious effort is made to protect personnel against tubercle bacilli, masks are worn both by the patient and by persons who examine, treat and give other care. There is considerable need for an impervious mask which protects the entire head and neck.

The exact percentage is not known, but definitely more physicians who work regularly in sanatoriums and on tuberculosis services in general hospitals have tuberculosis than those in other types of practice. This has been true since the early days of the sanatorium in Europe. A good many physicians go into

sanatorium work after they develop tuberculosis, while others contract the disease in the sanatorium. Alarming numbers of students of medicine who take training in sanatoriums and on tuberculosis services of general hospitals without rigid contagious disease technic develop primary tuberculosis and therefore become reactors to tuberculin. Among such physicians are those who later develop clinical lesions, some of whom may return to the sanatorium as staff members. Exacerbations are not uncommon among sanatorium physicians. These may be due in part to exogenous reinfections.

TESTS FOR SENSITIVITY TO PENICILLIN

To the Editor:—Are there any reliable tests for determining hypersensitivity to penicillin?

F. Harold Krauss, M.D., Philadelphia.

ANSWER.—With reference to diagnostic tests, reactions to penicillin may be divided into three types:

1. Contact dermatitis to penicillin in those who engage in its manufacture and administration and in those who receive topical applications of penicillin preparations. In such types of allergy to penicillin the patch test with the antibiotic will show an eczematoid reaction and is of diagnostic value (Friedlaender, S.; Watrous, R. M., and Feinberg, S. M.: *Arch. Dermat. & Syph.* 54:517 [Nov.] 1946).

2. In some of the immediate reactions to injection or oral administration, consisting of urticaria, a scratch or intradermal test may give a positive reaction to a solution of penicillin. Usually, however, such reaction is negative; even when present it must be carefully controlled by tests on nonallergic persons, since penicillin in high concentrations gives false positive intradermal reactions.

3. The commonest type of penicillin reaction, which occurs several days after the administration of the drug, has the characteristics of serum sickness and usually consists of urticarial rashes, arthralgia and fever. Such reactions are not associated with positive skin tests. It should be pointed out further that the positive skin test obtained with extracts of the penicillium fungus in patients who have hay fever or asthma from the inhalation of mold spores is not accompanied by a positive skin test to penicillin (Feinberg, S. M.: *J. Allergy* 15:271, 1944).

Observations thus far indicate that such patients are no more likely to have reactions to penicillin develop than those who are not mold sensitive.

CHRONIC ALCOHOLISM

To the Editor:—A patient of mine requests that I do something radical to cure him of chronic alcoholism. He claims he heard some radio program wherein an operation "for draining the fluid from the brain" was offered as a cure for this condition. I had him check this and he was told that the treatment consisted of a lumbar puncture. What results are claimed for such treatment, and at what intervals is the puncture repeated?

M.D., New York.

ANSWER.—H. Goldsmith (*Amer. J. Psychiat.* 10:255, 1930) recommended spinal puncture for the treatment of acute alcoholic episodes. He expressed the belief that this treatment may be of value in preventing recurrences of the episodes. E. S. Cowles (*Med. J. & Rec.* 133:417 and 472, 1931) stated his belief that cerebrospinal edema is responsible for the symptoms of chronic alcoholism and that repeated spinal punctures remove the edema. When the edema has thus been corrected the craving for alcohol disappears. The evidence presented seems too meager for acceptance at this time. Furthermore, the data presented lose much weight when one considers Cowles's assertion that alcohol may be present in the spinal fluid of chronic addicts for six weeks after the ingestion of spirits. After weighing the evidence with regard to spinal puncture in the treatment of chronic alcoholism, W. L. Voegtlin and F. Lemere (*Quart. J. Stud. on Alcohol* 2:717, 1942) concluded: "Spinal drainage and other efforts to reduce cerebral edema have produced inconclusive and inconstant results."

POLIOMYELITIS

To the Editor:—Can you tell me whether the virus of poliomyelitis has been isolated or found in the urine of patients suffering from this disease?

M. D. Horneda, M.D., El Paso, Texas.

ANSWER.—Efforts have been made to recover the virus of poliomyelitis from urine of patients suffering from this disease without success. Whereas a transient paralysis of the bladder which sometimes is present early in this disease would indicate that the virus may affect the urinary system this is probably a mediated effect through nerves controlling the bladder rather than a direct effect of the virus on the bladder parenchyma itself.

SYMPTOMS FOLLOWING SUBTOTAL THYROIDECTOMY

To the Editor:—I have a patient who had the thyroid removed in 1937 because of nervousness and insomnia. She is 34 years old and for the past year and a half has been the rounds of doctors, all of whom have tried to assure her that she has no organic heart trouble. Her symptoms, which to her are becoming worse, are palpitation and tachycardia on the least exertion; extreme heart consciousness especially after meals, when she states that her heart *runs away* and she gets nauseated; inability to go to sleep on account of the rapid heart rate and pounding in her chest; constant tightness and dull aching around the area of the cardiac apex, which at times becomes a sharp pain; loss of weight. She has also had two pelvic operations for removal of a cystic ovary. She still has one ovary and there do not appear to be any symptoms of early menopause. Her pulse rate is invariably over 100, and with the least excitement or effort it ranges from 120 to 140 and her blood pressure is as unstable as the pulse rate. She has not had a basal metabolic test for over a year, at which time it was plus 4. Digitalis does not appreciably lower the pulse rate but instead has a tendency to make the patient more apprehensive. Quinidine does have a favorable reaction on the rate and also on the fibrillation. Fluoroscopies have been negative. When the patient is excited there is a perceptible bulge above the thyroid scar to the left, and the neck becomes hyperemic down below the clavicle. Iodides combined with bromides have been tried with some success, but because the iodides caused a skin rash they had to be discontinued. There is no history of rheumatic fever, and as far as I can ascertain with the facilities available here in the country the heart, with the exception of rate and fibrillation, is normal. I have no electrocardiograph available. To my mind this case presents a picture of thyrotoxicosis or a neurocirculatory asthenia. The rest of her physical examination is essentially negative with the exception of prematurely gray hair and myopic astigmatism. What line of treatment would you suggest in this case?

H. L. Shinn, M.D., Hallieford, Va.

ANSWER.—This patient presents an interesting problem. She has either a persistence or recurrence of her thyrotoxicosis or a functional nervous disturbance of some sort with heart damage. The incidence of thyrotoxicosis following a subtotal thyroidectomy for toxic diffuse goiter varies in different clinics from 5 to 15 per cent. Persistence of the disease is much more common than recurrence. In some patients the normal level of basal metabolism is a little below the average, and for them a basal metabolism test within the standard limits may give figures actually a little high. It would be well to determine the basal metabolism level by making several tests on successive days. Iodine or propyl-thiouracil should then be administered to the patient. If she improves a great deal, it may be concluded that her symptoms are the result of thyrotoxicosis. If she does not improve, it may be concluded that they are neurogenic in origin.

DISCOLORATION OF FINGERS AND PORTAL CIRRHOSIS

To the Editor:—A man aged 62 last February had bleeding from esophageal varices. He has been under my treatment for one month. Liver function tests showed considerable impairment of function. The liver was palpable 1 inch (2.5 cm.) under the costal arch. In view of the bleeding and the enlarged liver a diagnosis of cirrhosis was made. The patient was somewhat icteric and had felt ill for a long time. He was put on a diet and a regimen of choline 15 mg. three times a day, vitamin A capsules once a day and liver concentrate twice a week. Under this regimen the patient appears to feel perfectly well and has gained several pounds. One month after he received the choline he noticed a purplish discoloration of tip of his left little finger. On inspection it was found that not only the nail margin but also the tips of all the other fingers of both hands showed the purplish discoloration. There are no symptoms to account for this discoloration. Choline was discontinued one week ago; however, the bluish discoloration has not disappeared. Can you tell me whether choline might produce such an effect? If so, what would be the treatment to produce a constriction of the venules? There is no swelling of the fingers. The Kahn test was negative, the serum bilirubin determination increased considerably.

Eric Lehr, M.D., East St. Louis, Ill.

ANSWER.—It is difficult to give a positive opinion as to the nature and cause of discoloration of this patient's fingers without the privilege of examining him. No primary vascular or cutaneous disease is likely to produce such a clinical picture. If the patient's palms also show a pinkish or violaceous discoloration, it is rather probable that the discoloration of the finger tips is only a part of the palmar erythema, so often associated with portal cirrhosis. The capillary dilatation on which the color changes depend is believed to be related to the failure of the damaged liver to inactivate estrogenic substances, which are normally formed in the body. The urine of such patients may contain increased quantities of free and combined estrogens; in some patients the administration of diethylstilbestrol or similar compounds will cause an increase in the palmar erythema. Incidentally, the discoloration of the palms and finger tips may persist even if there is clinical and laboratory evidence of regression of the primary disease.

It is unlikely that choline has any relationship to the production of the changes described, particularly in view of the small

dose administered in this case. Much larger amounts have been employed for many patients with hepatic disease without the production of anything comparable in the way of discoloration. As long as the fingers are not painful, no treatment would appear to be indicated.

TREATMENT OF VARICOSE ULCER AND HYPERTENSION

To the Editor:—I have a patient aged 63, a man with hypertension of 280 systolic and 130 diastolic. He has severe bilateral varicose veins with an ulcer over the right ankle. The deep veins of the right leg are not patent, and he is not a suitable candidate for ligation of the varicose veins. Wearing an Ace bandage causes discomfort. Is there some method of treatment of the varicose ulcer which can apply pressure without constricting effect? What treatment is recommended for severe hypertension? The heart and lungs and the general condition of the patient are fairly good.

Robert S. Srigley, M.D., Ardmore, Okla.

ANSWER.—The ulcer described must be a postphlebitic ulcer, the result of an old deep venous thrombosis. An additional factor in its persistence is likely to be a diffuse arteriolar sclerosis, which patients at that age and with such a diastolic pressure invariably present. The high pulse pressure is indicative of a rigid, nondistensible aorta unless some other mechanical factor in the aortic valves is present.

Such patients may greatly benefit from glycerin-gelatin casts or elastic adhesive bandages applied over a gauze bandage, never directly on the skin. A few weeks of rest in bed may be necessary to heal the ulcer. The degree of hypertension can be determined by noting the vascular damage in the eyegrounds, in the heart and large vessels, in the kidney and in the peripheral arterial tree. The flexibility of the vascular bed can be determined by the reaction of the blood pressure levels to barbiturates. On the basis of these observations one may decide on surgical, medical or dietary treatment.

From the data submitted it is likely that, outside of much rest, barbiturates and a low sodium diet, no form of therapy is of decided benefit in this particular instance.

MERCURY IN DOMESTIC WATER SUPPLY

To the Editor:—A metal tank is used as a reservoir for a domestic water supply for a household. This tank has been used as a storage tank at a mercury mine for the storage of mercury concentrates. It has been thoroughly cleansed, scrubbed and irrigated. A reputable analytical chemist reports an analysis of water run through it showing mercury present in the concentration of 2 parts in one million. Is this water safe for drinking purposes and ordinary household use?

Frederick F. Ragsdale, M.D., Paso Robles, Calif.

ANSWER.—By computation it appears that the daily intake of mercury for an adult will approximate 1 mg. If true, this falls within the safe limit for mercury intake as devised by the American Standards Association. This standard is specified for inhalation of mercury vapors or dust, this form of exposure being regarded as more significant than the oral intake of the same quantity of mercury. A further safety factor derives from the probability that continued use of this water tank will lead to a day by day decrease in the mercury content of the water. Contrariwise, it is to be recognized that mercury and particularly metallic mercury is treacherous in that variations in temperature or pH may alter the quantity present in the water content of the tank. If this tank is stationed indoors and if it may be presumed to contain hidden pockets of metallic mercury, it should not be allowed to dry out, particularly if surrounding temperatures are relatively high. Metallic mercury readily evaporates. To introduce an additional factor of safety it might be well again to scrub this tank, employing a calcium polysulfide solution (2.5 per cent) or, if this is not available, to scrub with the ordinary lime sulfur mixtures employed in fruit tree sprays. It is the intent of this reply to minimize probability of substantial prospective exposures to mercury provided there are no lurking pockets of mercury as yet undetected.

THE RH FACTOR

To the Editor:—Would you please discuss the following hypothetical case: A primigravida has Rh-negative blood, and her husband has Rh-positive blood. What are the probabilities of having trouble with Rh incompatibility in her first child? In later children? Is cesarean section at 8 months advisable in this or subsequent pregnancies with the hope of discouraging the production of anti-Rh bodies and getting good babies?

Dorr H. Burns, M.D., Chicago.

ANSWER.—Congenital hemolytic disease (fetal erythroblastosis) is extremely rare in the first child except when the mother had a previous transfusion or abortion. Potter (Rh, Year Book Publishers, 1947, p. 120) found the disease only in 3 first-born children in the absence of a known cause for earlier

maternal immunization among 122 Rh-negative mothers who gave birth to infants with hemolytic disease. The incidence was increased from 1 in 42 in second pregnancies to 1 in 12 in fifth pregnancies. Opinions are divided regarding the advisability of cesarean section as a means of protecting the fetus from injury by maternal antibodies. It seems that in most instances damage to the fetus begins early in pregnancy and that the handicap of prematurity is an added burden. It is possible that the recently introduced treatment of the newborn baby by replacement transfusion will improve the outlook for babies delivered by section.

CUTANEOUS TUBERCULOSIS

To the Editor:—I have 2 cases of rosacea-like tuberculid of Lewagowski. Both cases were confirmed by biopsy, and both cases are rather severe. Is there anything new that you can recommend for these unfortunate persons? Is calciferol or streptomycin of any value in these cases?

William L. Dobes, M.D., Atlanta, Ga.

ANSWER:—Streptomycin has been used in the treatment of cutaneous tuberculosis in only a few patients. The results reported by Hinshaw, Pyle and Feldman (*Am. J. Med.* 2:429, 1947), suggest that the improvement that followed has been temporary or questionable. In the treatment of 1 patient with intractable lupus vulgaris the results were said to be excellent. Obviously many patients with cutaneous tuberculosis need to be studied after treatment with streptomycin and followed up to observe the results.

Calciferol has been used with encouraging results. The dosage has varied from 50,000 to 150,000 units a day for a period of several months. The one caution that must be observed in the use of large amounts of calciferol is the toxic manifestations of high dosages of vitamin D₂. They consist of anorexia, nausea, vomiting, a feeling of depression, albuminuria and renal insufficiency. All patients who are treated with high dosage schedules should be followed carefully for signs of intoxication.

MORPHINE AND PAPAVERINE

To the Editor:—What is the safe dosage range and method or technic for administering morphine sulfate and papaverine intravenously?

M.D., New York.

ANSWER:—The intravenous dose of morphine sulfate in shock is from 10 to 15 mg. ($\frac{1}{4}$ to $\frac{1}{2}$ grain), conveniently as the U. S. P. morphine sulfate injection, usually available as 10, 15, 20 and 30 mg. in 1 cc. If it is injected slowly, perhaps in two or three minutes, the toxicity is not materially greater than with hypodermic injection. The 10 mg. dose could be repeated once in an hour if pain is not sufficiently obtunded.

The intravenous dose of papaverine hydrochloride is stated by the U. S. P. XIII as 30 to 100 mg. ($\frac{1}{2}$ to $1\frac{1}{2}$ grains) by mouth or by vein. The intravenous dose against colic is 5 to 30 mg. ($\frac{1}{4}$ to $\frac{1}{2}$ grain). It was also proposed as a test of circulation time, by the deep inspiration which follows when 40 mg. is injected in one second into the cubital vein. The results are not very reliable. Rapid injections are apt to produce nitritoid symptoms, with fall of blood pressure. For therapeutic purposes it is desirable to take one to five minutes for the injection. No serious effects have been reported. It may be injected as the U. S. P. papaverine hydrochloride injection, usually available as 30 mg. in 1 cc.

URINARY TRACT TUBERCULOSIS

To the Editor:—In what per cent of cases of urinary tract tuberculosis are the patients secondarily infected by organisms other than the tubercle bacillus, and about what per cent of patients with genital tuberculosis also have urinary tract tuberculosis?

Perry D. Melvin, M.D., Miami, Fla.

ANSWER:—1. Not much information is available on the incidence of mixed infection. Nesbit, Keitzer and Lynn, in the *Journal of Urology*, September 1945, stated that one third of 260 patients with tuberculosis of the urinary tract were found to have an infection by a secondary organism during a five year observation period.

2. Almost all cases of genital tuberculosis are said to involve also tuberculosis of the urinary tract. The figures vary somewhat, and the mode of development is not agreed on, but certain data are pertinent: The origin of most renal and some genital lesions is hematogenous. In addition, males can and usually do infect the urinary passages from genital foci, and the converse also readily occurs. Tubercle bacilli may almost always be isolated from the urine of males with genital tuberculosis. Females only rarely transmit the infection between the genital and urinary systems, by contiguity. In one series of patients with renal tuberculosis an abnormality of the genitalia was found in 95 per cent.

OCCIPITAL HEADACHE IN A SINGER

To the Editor:—This is a question concerning sudden occipital headache in a singer. He is a tenor, aged 37 and in good health. While singing in a choir and "holding a high note" he felt sudden severe pain in the back of his head; "the walls seemed to come toward him"; he felt weak and had a dull headache afterward. Three days later during similar circumstances he had a like episode. The patient sings with his throat and not his abdomen. Could venous return have been impeded enough to cause a generalized intracranial pressure? Could he have ruptured a small aneurysm? Do such accidents occur often in singers? Is there any prophylaxis? What is the prognosis for further attacks? I should like a list of references for study.

M.D., Pennsylvania.

ANSWER:—The most likely explanation for the syndrome described appears to be a spasm of the muscles of the occipital and posterior cervical area, secondary to prolonged contraction. Similar painful phenomena are not infrequently noted as the result of prolonged contraction of muscles elsewhere in the body. It is possible, but less likely, that a ruptured nucleus pulposus of the upper cervical area may produce this phenomenon. Generalized intracranial pressure would be unlikely to produce sudden, severe pain localized to the occiput. It is doubtful that the singer ruptured a small aneurysm on two occasions without severer complications. Prophylaxis probably depends on more relaxation of the muscles in that area without throwing the head backward to such an extreme degree. As far as is known, there are no specific references on this subject.

HERPES OF THE PENIS

To the Editor:—A man aged 40 has had recurrent herpes on the shaft of the penis for several years. Could you suggest what this might be? What is the best treatment for the condition? What might be done to prevent its recurrence? From the history, I do not believe that this is associated with intercourse or contraceptives.

M.D., New York.

ANSWER:—Herpes preputialis is interpreted as a subthreshold infection with a virus which flares up under certain conditions, e. g. local irritation or lowered resistance of the host. Certain individuals develop herpes after the use of a rubber condom. All types of local irritation should be avoided. There is no known cure for recurrent herpes of the penis.

Occasionally circumcision will clear up herpes of the prepuce.

There have been occasional evidences of success through multiple vaccination of the patient, i. e. vaccination with the smallpox vaccine once a week for four weeks.

CHANCES OF DEVELOPING PARKINSON'S DISEASE

To the Editor:—A patient, a young girl, asked me about her fiancé, who gave a history of encephalitis about one year ago. He was told that he had completely recovered. What are the chances of his developing chronic encephalitis (Parkinson's) and how can it be determined in advance?

M.D., New York.

ANSWER:—The chances of developing late sequelae of encephalitis cannot be stated accurately. Presumably the chances are relatively small if the neurologic signs and symptoms at the time of the acute infection were minimal and if no signs or symptoms remain. Direct evidence of possible future sequelae, such as Parkinson's disease or epilepsy, might be furnished by the electroencephalograph. Abnormalities of rhythm, especially if focal and persistent on repeated examinations, would warn of possible trouble in the future.

BRACHIAL NEURALGIA

To the Editor:—The *Journal*, September 13, page 132, discusses a query regarding pain in the right upper arm. The history of pain in the upper arm following trauma with no relief from ordinary therapy suggests brachial neuralgia or neuritis as stated. Brachial neuralgia is a common cause of painful shoulder, but because this diagnosis is not often made the treatment is generally ineffective. In the case cited the pain in the upper arm is probably a referred pain, so that local therapy could be of no avail.

The treatment should be brachial block with 5 to 10 cc. of a fresh solution of 1 per cent procaine hydrochloride repeated at three, seven and fourteen day intervals, depending on the degree of pain. Six to ten treatments will be required. If results are not obtained from the first few injections, orthopedic consultation or a complete neurologic examination is in order.

In brachial neuralgia the first treatment usually produces gratifying results. The block with its analgesic effect permits the patient to move the arm in a wider range. This gradually breaks up the scar tissue which results from trauma and disuse. The vicious cycle is broken by the block. Diathermy following injection treatment is of benefit, and the patient then carries out the subsequent required manipulation.

F. X. Krynicki, M.D., Detroit.

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BCG VACCINATION IN ALL AGE GROUPS

Methods and Results of a Strictly Controlled Study

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A radical change in our thinking in regard to BCG vaccination has been initiated by the United States Public Health Service under the guidance of Dr. Herman E. Hilleboe, one time Assistant Surgeon General, with the approval of Surgeon General Thomas Parran. Under the auspices of the United States Public Health Service, a conference on BCG was held in Washington on Sept. 7, 1946.¹ This representative body, composed of proponents and opponents of BCG vaccination, concluded and recommended essentially as follows:

"A. Medical literature fails to reveal any proven cases of progressive disease as a result of BCG vaccination.

B. From studies presented at the conference, it appears that BCG vaccination confers increased resistance to tuberculosis for the limited period of time covered in these studies.

C. Extensive investigations should be carried on cooperatively with recognized research groups throughout the country during the coming years, especially in population groups highly exposed to tuberculous infection.

D. It was recommended that a single laboratory be established by the Tuberculosis Control Division to produce BCG vaccine for the whole country for use in research programs proposed at this conference.

BCG (*Bacillus* of Calmette and Guérin) is a non-virulent bovine tubercle bacillus originally isolated from the milk of a tuberculous cow in 1906. The virulence of this organism was then reduced by the regular transfers on a bile potato medium over a period of thirteen years. The avirulent organism was able to produce local nodular lesions in animals, but there was no evidence of progression or generalization of the process. It was then discovered that these animals when infected with virulent tubercle bacilli resisted a progressive infection to a great extent. With the assurance that the organism was harmless and that it afforded a certain degree of protection against virulent tubercle bacilli,² human application was instigated in 1921 by Weill-Hallé in

Paris.³ Since that time it is estimated that some ten million vaccinations have been performed throughout the world.

The reluctance to accept BCG in the United States stems largely from the laboratory studies of Petroff and the tragedy in Lübeck, Germany. Petroff and his co-workers⁴ dissociated BCG into rough "R" and smooth "S" forms. The latter, it was claimed, had the ability at times to produce progressive disease in animals.⁵ One of us (S. R. R.), working in an isolated laboratory where only BCG was cultured, using many thousands of cultures and animals over a period of thirteen years, has been able to dissociate BCG but has never seen progressive disease following BCG inoculation in any phase.⁶ As much as three hundred thousand times the human dose, calculated by weight, has been injected into animals without deleterious effect.⁷ Petroff, in a personal communication in 1934, conceded at that time that BCG was probably a pure "R" form and as such incapable of producing progressive tuberculosis.

The disaster that occurred in Lübeck, Germany, was one in which 271 infants received what was supposed to have been BCG vaccine by mouth. Seventy-seven died of progressive disease following ingestion of this mixture. It was later proved by the Robert Koch Institute of Berlin for the German government that the vaccine used was a mixture of BCG and a virulent strain of tubercle bacilli which was kept in the same incubator as BCG. The virulent strain in question was received from the nearby town of Kiel, and was readily identified by its peculiar characteristic of producing a phosphorescent green color in Sauton medium. For this act of malpractice, those responsible were imprisoned.⁸

The following study has been in continuous operation for thirteen years and constitutes the longest continu-

3. Weill-Hallé, B., and Turpin, R.: Premiers essais de vaccination antituberculeuse de l'enfant par le bacille Calmette-Guérin (BCG), *Bull. et mém. Soc. méd. d. hôp. de Paris* **49**: 1589-1601, 1923.

4. Petroff, S. A.; Branch, A., and Steenken, W., Jr.: Study of *Bacillus-Calmette-Guérin* (BCG): Biological Characteristics, Cultural "Dissociation" and Animal Experimentation, *Am. Rev. Tuberc.* **19**: 9-46, 1929.

5. Petroff, S. A.; Sasano, K. T., and Medlar, E. M.: Studies of *Bacillus-Calmette-Guérin* Strain of Tubercle Bacillus; Effect "in Vitro" of Environment on Virulence of BCG, *Am. Rev. Tuberc.* **23**: 215-222, 1931. Reed, G. B.; Orr, J. H., and Rice, C. E.: Studies in Variability of Tubercle Bacilli: BCG, *Canad. J. Research* **11**: 362-377, 1934. Dreyer, G., and Vollum, R. L.: Mutation and Pathogenicity Experiments with BCG, *Lancet* **1**: 9-15, 1931.

6. Rosenthal, S. R.: The General Tissue and Humoral Response to an Avirulent Tubercle Bacillus, Urbana, University of Illinois Press, 1938. Boquet, A., and Nègre, L.: Sur la fixité des caractères d'atténuation de la virulence du vaccin BCG, *Compt. rend. Soc. de biol.* **103**: 290-292, 1930. Kraus, R.: Ueber die Dissoziation des BCG—Stammes nach Petroff, *Ztschr. f. Immunitätsforsch. u. exper. Therap.* **61**: 454-459, 1929. Birkhaug, K. E.: Etudes sur la dissociation du *Mycobacterium tuberculosis*, *Ann. Inst. Pasteur* **54**: 19-70 and 195-244, 1935.

7. Rosenthal, S. R.; Blahd, M., and Leslie, E. I.: Ten Years' Experience with BCG (Experimental and Clinical), *J. Pediat.* **26**: 470-480, 1945.

8. Lange, L., and Pescatore, H.: Die Säuglingstuberkulose in Lübeck, Berlin, Julius Springer, 1935.

From Tice Laboratory and Clinic of the Chicago Municipal Tuberculosis Sanitarium and the University of Illinois College of Medicine.

1. Report of a Conference on BCG Vaccination, *Pub. Health Rep.* **62**: 346-350, 1947.

2. Calmette, A.; Guérin, C.; Boquet, A., and Nègre, L.: La vaccination préventive contre la tuberculose par le BCG, Paris, Masson & Cie, 1927.

ous experiment in the United States. The first three years were spent entirely on research in animals, and during the last ten years human beings of every age group have been vaccinated. This study is unique in that: (1) the controls represent a population similar to the vaccinated, and (2) the principle of isolating the vaccinated person until the tuberculin test became positive in result was practiced when tuberculosis was present in the household. In the latter group, controls were isolated for similar periods of time. The major premise of this study was that BCG should supplement present methods of early diagnosis and segregation.

GROUPS STUDIED

1. *Newborn Infants Delivered at the Cook County Hospital of Chicago.*—Arrangements were made with the mothers in the prenatal clinic so that enough time was available to examine roentgenologically each member of the household. The children in this group came from households in which there was no known tuberculosis as demonstrated by roentgen examination of each member. The infants were vaccinated or accepted as controls before they left the hospital, and no isolation was practiced. This study has been in progress for ten years.

2. *Infants Born of Tuberculous Parents Anywhere in Chicago.*—Isolation of the infants was practiced for the controls and vaccinated alike, usually from six to twelve weeks, depending on the severity of the disease. Children were returned to their families only if examinations of concentrated sputum of the tuberculous member, within six months, were negative in result. This group has been followed for seven years.

3. *Student Nurses at the Cook County Hospital (With Drs. Rhodes and Afremow).*—Students were tuberculin tested and vaccinated during their first week in training. They were not allowed to go onto ward for at least one month after vaccination. This study has been in progress for seven years.

4. *Medical Students at the University of Illinois.*—These students were examined roentgenologically and tuberculin tested at the end of their first year or the beginning of their second year. The negative reactors who desired vaccination were vaccinated. Those who refused vaccination were used for the control group. This group was begun seven years ago.

5. *Children in a Federal Housing Project.*—The entire community was first examined roentgenologically and those with active pulmonary disease were isolated. Alternate children up to 10 years of age who did not react to tuberculin were vaccinated. This study is now in its sixth year.

6. *Inmates of a Mental Institution.*—After a roentgen survey and tuberculin testing, the persons with active disease were isolated. Seven months later the negative reactors were again tested. Alternate negative reactors were vaccinated. All age groups were included. This study was initiated four years ago.

The ensuing report embraces for the main part groups 1 and 2. Groups 3 to 6 are only mentioned, as some of the final results are not available, and they will be published in detail elsewhere.

THE VACCINE

The cultures used for the vaccine are transfers from the original culture at the Pasteur Institute in Paris. These were brought over by one of us (S. R. R.) in

March of 1934 and have been transferred continuously every two weeks since that time. For each batch of vaccine, virulence studies are made in animals. The reactions in animals and the growth characteristics of this organism have not appreciably altered during this thirteen year period. The type of lesion produced in animals and the rapidity of development of a tuberculin action in animal and man remain the same. The vaccine is gathered from the growth on synthetic mediums (Sauton) and is a suspension of bacilli in a buffered salt solution. The vaccine is put up in capillary tubes in much the same way as is done for vaccinia.

METHOD OF APPLICATION

The oral method of administration originally advocated by Calmette and used by Weill-Hallé⁹ was largely replaced by the intracutaneous route suggested by Wallgren.⁹ The former method yielded a small percentage of reactors to tuberculin, while the latter yielded a high percentage. However, the local sequelae following the intracutaneous method were: ulcerations which may persist for months, focal abscesses and suppuration of lymph nodes. In a recent report from Denmark by Holm¹⁰ universal ulceration was reported following intracutaneous vaccination. In 26 of 3,369 vaccinations, local abscesses or suppurated lymph nodes developed. Residual scars were the rule. A similar experience was reported in the study with Indians in this country by Aronson.¹¹ It is obvious that it would facilitate the generalized use of a vaccination if complications could be eliminated. To this end one of us (S. R. R.) described the scarification method of multiple punctures.¹² In thousands of vaccinations by this method complications have been practically nil. The actual technic is as follows:

A drop of vaccine is placed on the outer aspect of the alcohol-cleansed arm. A sewing type needle, similar to the one used for vaccinia, is held between the thumb and the index finger about 1.5 cm. from the point. The thumb and needle should form a continuous line. With the shaft of the needle held tangentially to the skin, the vaccine is spread in linear fashion for a distance of 2.5 cm. By a downward pressure, exerted to a large extent by the thumb, the skin is pierced with the needle point through the vaccine. Following this downstroke, which engages the point of the needle into the skin, an upward movement is exercised without disengaging the needle. The point of the needle remains buried in the skin on the upstroke. This precaution makes the method foolproof. The punctures are placed about 2 to 4 mm. apart, and ten punctures are made in a line. The vaccine is spread to the second line parallel to the first and 4 to 6 mm. away. Thus three lines of ten punctures each are made in an area of approximately 2.5 by 1.5 cm. The vaccine is allowed to dry on the arm; no blotting or covering with dressings is practiced. Wetting of the arm should be avoided for twenty-four hours.

The lesions following the multiple puncture method in newborn infants resembles goose flesh after two to six weeks following vaccination. The mother rarely knows which arm was inoculated. In children and adults each puncture progresses to form pink papules from a pinhead to 3 mm. in size. These papules after four to eight weeks regress rapidly. The recipient is

9. Wallgren, A.: Intradermal Vaccinations with BCG Virus: Preliminary Note, *J. A. M. A.* **91**: 1876-1881 (Dec. 15) 1928.

10. Holm, J.: BCG Vaccination in Denmark, *Pub. Health Rep.* **61**: 1298-1315, 1946.

11. Aronson, J. D.; Parr, E. I., and Saylor, R. M.: BCG Vaccine: Its Preparation and Local Reaction to Its Injection, *Am. Rev. Tuberc.* **42**: 651-666, 1946.

12. Rosenthal, S. R.: The Multiple Puncture Method of BCG Vaccination, *Am. Rev. Tuberc.* **39**: 128-134, 1939.

usually unaware of which arm was scarified. The draining lymph nodes may be palpable two weeks after vaccination, but never enlarge to the extent that the recipient is aware of it. Ulceration and breaking down of lymph nodes have never been seen.

In a special study made to determine how soon the tuberculin reaction becomes positive after vaccination at birth, it was found that none reacted before ten days (37 cases). Out of 57 tested at eleven to thirteen days, 8, or 14 per cent, reacted; of 30 tested at twenty-three to thirty-one days, 29, or 96.6 per cent, had positive reactions and of 53 tested at thirty-two to fifty-four days, 51, or 98.1 per cent, reacted positively. In young adults 50 per cent react to 1 mg. of old tuberculin in one week and 90 per cent in two weeks. Table 1 gives the results of tuberculin reaction in children, all vaccinated on the third to seventh day of life. The Vollmer patch test was done in these cases and, if negative in result, was followed by the Mantoux test, 1 mg. of old tuberculin being used. As the table shows, the tuberculin reactions continue to be positive in over 90 per cent of the cases up to four years and in about 80

high incidence of casual infection and the degree of exposure for the vaccinated and the control groups.

In older children and adults the duration of tuberculin reactions following a single vaccination was similar as far as they were tested (88.6 per cent of the 35 nurses tested reacted after three years).

TABLE 2.—Tuberculin Reactions in the Noncontact Control Group

Age	Number Registered	Number Tested	Number Positive	Percentage Positive
0-3 mo.	1,414	1,241	3	0.22
4-7 mo.	1,389	1,305	13	0.99
8-12 mo.	1,268	1,279	52	4.06
1-1½ yr.	1,248	1,254	109	8.10
1½-2 yr.	1,224	1,193	149	12.49
2-2½ yr.	1,201	1,145	194	16.94
2½-3 yr.	1,232	1,084	226	20.85
3-3½ yr.	1,188	1,008	243	24.10
3½-4 yr.	1,126	950	255	26.84
4-4½ yr.	1,018	865	240	27.75
4½-5 yr.	959	781	233	29.82
5-5½ yr.	853	679	213	31.37
5½-6 yr.	756	569	187	32.86
6-6½ yr.	616	439	159	35.98
6½-7 yr.	495	351	135	38.46
7-7½ yr.	364	249	102	40.96
7½-8 yr.	245	165	69	41.82
8-8½ yr.	161	102	49	44.95
8½-9 yr.	79	47	25	53.19
9-9½ yr.	20	17	12	70.59

TABLE 1.—Tuberculin Reactions Following a Single Vaccination in the Noncontact Group

Age	Number Registered	Number Tested	Number Positive	Percentage Positive
0-3 mo.	1,417	1,245	1,244	99.70
4-7 mo.	1,385	1,294	1,294	99.61
8-12 mo.	1,262	1,249	1,244	99.60
1-1½ yr.	1,248	1,186	1,187	99.26
1½-2 yr.	1,221	1,125	1,169	99.59
2-2½ yr.	1,201	1,069	1,067	99.92
2½-3 yr.	1,176	999	919	92.80
3-3½ yr.	1,112	908	865	96.39
3½-4 yr.	1,065	852	783	92.01
4-4½ yr.	932	765	688	89.93
4½-5 yr.	811	629	600	95.23
5-5½ yr.	811	629	601	95.56
5½-6 yr.	719	541	509	94.44
6-6½ yr.	699	467	525	79.85
6½-7 yr.	496	321	247	76.95
7-7½ yr.	359	228	165	72.37
7½-8 yr.	247	148	108	73.97
8-8½ yr.	158	94	60	63.83
8½-9 yr.	93	53	25	47.17
9-9½ yr.	28	20	12	60.00

EFFICACY OF THE VACCINATION; GROUP I

There was but 1 person who was hospitalized for tuberculosis in the vaccinated group compared with 15 for the controls. Considering roentgen evidence of disease such as parenchymal infiltration, hilar infiltration and calcification, there were 11 cases in the vaccinated and 39 in the control group. There was 1 death in the vaccinated as compared with 7 in the control group (table 3).

The clinical course and the postmortem findings of the vaccinated child that died revealed progressive

TABLE 3.—Incidence of Tuberculosis in Children Followed Since Birth

	Noncontact		Contact	
	Vaccinated	Controls	Vaccinated	Controls
Total number of children.....	1,417	1,411	151	105
Person-years observed.....	5,627	6,032	517	284
Cases of tuberculosis				
Total number.....	11	39	2	5
Rate *.....	1.95	6.46	3.86	17.60
Cases hospitalized				
Number.....	1	15	1	5
Rate *.....	0.17	2.48	1.93	17.60
Deaths from tuberculosis				
Number.....	1	7	0	4
Rate *.....	0.17	1.16	0	14.00
Deaths from other causes				
Number.....	27†	22†	3†	2†
Rate *.....	4.79	3.63	5.79	7.04

* Rate per thousand person-years' observation.
† In 42 of the 54 deaths, or 77.7 per cent, autopsies or coroner's examination verified the cause of death.

per cent after six to six and a half years following a single vaccination. These results are equal or superior to those obtained when other methods of introducing the vaccine are used. This has been verified by Nègre and Bretey¹³ and Weill-Hallé¹⁴ of France, Birkhaug of Norway,¹⁵ Wallgren of Sweden,¹⁶ and Etcheverry,¹⁷ Gines and Rebull Richieri of Uruguay.¹⁸

For comparison, table 2 lists the controls for this group. It will be noted that there is a high rate of tuberculin reaction conversion. This is not surprising in that children included in this part of the study come from the poorest districts of Chicago, where the tuberculosis death rate is high. The high tuberculin reaction conversion of the controls is of special interest in that members of the household of these children had normal roentgenograms of the chest. This indicates the

13. Nègre, L., and Bretey, J.: Vaccination par le BCG par scarifications cutanées, Paris, Masson & Cie, 1942.
14. Weill-Hallé, E., and Lagrou, M. A.: La vaccination contre la tuberculose par le BCG: Méthode des scarifications cutanées, Paris, Gaston Doit & Cie, 1942.
15. Birkhaug, K.: Protective Value of Intracutaneous and Percutaneous Methods of BCG Vaccination (Comparative Experimental Investigation), Acta med. Scandinav. 117: 274-312, 1944.
16. Wallgren, A.: Personal communication.
17. Etcheverry, J. C.: in "La tuberculosis," Buenos Aires, S. A., 1940.
18. Gines, A. R., and Rebull Richieri, J.: La vacuna BCG en la profilaxis de la tuberculosis, Rev. de tuberc. d. Uruguay 13: 255-266, 1945.

primary tuberculosis in the lung and tuberculous meningitis. There were no lesions at the site of BCG inoculation or in the draining lymph nodes. It is noteworthy that six months after vaccination this child failed to react to the first Vollmer patch test and had only a weakly positive reaction on retesting. At fifteen months the patch test again elicited a negative reaction and at eighteen months a weakly positive reaction. In a reconstruction of this case, it can be considered as one which

was at best a "poor take," and more likely "no take." Unfortunately, the mother was not entirely cooperative, so that a Mantoux test could not be performed. The child was eventually taken south, where intractable diarrhea developed. Death occurred soon after his return, at 22 months of age.

A comparison of the incidence of tuberculosis in siblings is given in table 4. Approximately 41 per cent of our entire series in group I were siblings. This constitutes a more exact population for comparison. There were 4 cases of tuberculosis in the vaccinated and no deaths, against 22 cases in the controls with 3 deaths. The morbidity rate per thousand person-years was 5.29 times higher in the nonvaccinated group.

In comparing the time of occurrence of tuberculosis and the type and course of the disease in the vaccinated and in the controls, a distinct contrast is noted (chart 1). There were no cases of tuberculosis in the vaccinated infants 1½ years of age and under, as compared to 9 cases in the controls, 3 of whom died. There were 20 cases of tuberculosis and 6 deaths up to 3 years of age and under in the control group and but 4 cases in the vaccinated. The 1 death has already been discussed.

TABLE 4.—Incidence of Tuberculosis in Siblings, Noncontact

	Vaccinated	Nonvaccinated
Total number of children.....	559	600
Person-years observed.....	2,712	2,828
Cases of tuberculosis		
Total number.....	4	22
Rate *.....	1.47	7.78
Patients hospitalized		
Number.....	0	9
Rate *.....	0	3.18
Deaths from tuberculosis		
Number.....	0	3
Rate *.....	0	1.06

* Rate per thousand person-years observed.

The duration of the process in the vaccinated group was under one year for all cases, whereas for the controls there were 11 cases out of 25 that presented lesions for longer than twelve months, some lasting over two years (chart 2). Calcification occurred in about 50 per cent of the active lesions of both groups. Six of the 10 controls presented evidence of calcification within two to three years, and 4 not until three to five years. On the contrary, in all 4 cases of the vaccinated group, calcification was noted within two to three years. In addition 3 of the 11 cases in the vaccinated group presented calcification as the first and only roentgen finding as compared to 3 of 39 cases in the controls.

Considering the 7 persons in the control series that died of extensive disease, there were an additional 2 patients in whom the lesions in the lung involved the entire lobe. There were no such cases in the vaccinated group (except the 1 death already described).

From these observations it may be deduced that in the vaccinated group not only is there a suppression of virulent infection, but when infection with virulent organisms does occur, the lesions are less extensive, of shorter duration and calcify earlier than the lesions in the nonvaccinated group.

EFFICACY OF THE VACCINATION, GROUP II

All the children in group II were isolated in foster homes for varying periods of time, depending on the source and the degree of tuberculosis. The control and vaccinated subjects were chosen from a master chart by a person who had only paper knowledge of the cases

of infection. In this way no selection between control and vaccinated could be practiced. The discrepancy in the number of cases in the vaccinated and the control group was due to the fact that during the early trial period varying lengths of time of isolation were experimented with and controls were not included. Subsequent to the establishing of a definite schedule, the cases were alternated. To attest that this is an unbiased

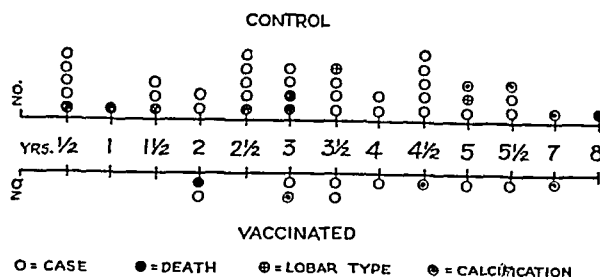


Chart 1.—Incidence of tuberculosis by age groups.

method, a previous study showed that the mother was a source in 58.6 per cent of the vaccinated and 60.3 per cent of the controls; the father in 23.3 per cent and 34.9 per cent respectively. Of the contacts 43.1 per cent had positive sputum in the vaccinated against 39.7 per cent in the controls.

There were 2 cases of tuberculosis in the vaccinated group, in which only 1 patient needed hospitalization, as compared with 5 cases in the control group, in which all patients were hospitalized and 4 died of tuberculosis (table 3). Again recovery in the vaccinated group was within six to twelve months, whereas in the control group the 1 patient that lived had a stormy course for two to three years.

Considering the contact and noncontact group as a whole, there were 13 cases of tuberculosis and 1 death in the vaccinated group as compared with 44 cases of tuberculosis in the controls with 11 deaths.

GROUP III

The student nurses who were vaccinated were allowed to work in the Tuberculosis Hospital, whereas the control negative reactors were not. Notwithstanding the

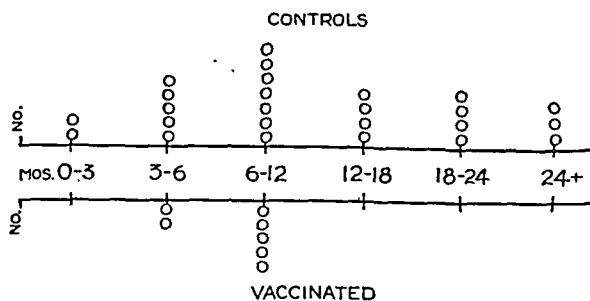


Chart 2.—Duration of active lesions exclusive of deaths and calcification only. Each circle represents a case. (Insufficient roentgenograms were done in 4 cases; lesions were still present in 3 controls.)

discrepancy in the degree of exposure, in none of the 142 vaccinated nurses, over a period of seven years, did pulmonary tuberculosis develop. In contrast there were 3 cases of pulmonary tuberculosis in the 199 controls. All required bed rest and 2 required sanatorium care. There were 3 additional cases of pulmonary tuberculosis among the tuberculin-positive reactors. Tubercle bacilli were said to have been recovered from a cervical

lymph node of 1 of the vaccinated nurses. She gave a history of drinking raw milk. The lesion did not necessitate hospitalization.

GROUP IV

Medical students at the University of Illinois were first vaccinated in 1939. In the 109 students vaccinated over a four year period, there were no cases of pulmonary tuberculosis. Four cases were reported in the nonvaccinated groups. The complete data are not yet available because of the interruption of the war. Questionnaires are being sent out to obtain more recent information.

GROUP V

In the federal housing project there were 699 children vaccinated and 625 controls who did not react to tuberculin. There were 275 children who reacted to tuberculin at the onset who were not vaccinated. Tuberculin testing and roentgenograms of the chest were done every year. There were no cases of pulmonary tuberculosis in the vaccinated group, whereas among the control negative reactors there were 4 cases of roentgen evidence of the disease, which was considered active in 3. In the tuberculin-positive group there were 2 persons with active tuberculosis of whom 1 died of the disease. Another death from tuberculosis occurred in a child whose tuberculin reaction was not recorded but whose original roentgenogram of the chest was negative. Considering the negative and positive reactors not vaccinated, there were 7 cases of tuberculosis of which 2 were fatal, against no cases of tuberculosis in the vaccinated group.

GROUP VI

Some 4,500 patients at a mental institution were examined roentgenologically and tuberculin tested. Of these 251 did not react to 1 mg. of old tuberculin. The persons with active disease were segregated and the negative reactors were retested seven months later; 84.4 per cent of the 251 had converted. Of the remaining negative reactors, 20 were vaccinated and 15 were kept as controls. In order to identify the vaccinated and the control subjects, they were tattooed with india ink, sterile ink being used and the same type of needle as was used for vaccination. The local reactions to the vaccination did not differ from those described for young adults, although some patients were up to 66 years of age and their habits were unclean. No dressings were used after vaccination. The present status of these patients was submitted by Dr. E. Teller, who was originally associated with this work. There was no pulmonary tuberculosis in the 20 patients vaccinated and 1 case of bilateral minimal arrested pulmonary tuberculosis in 15 controls. The status of the patients was obtained approximately four years following vaccination.

COMMENT

This study represents the longest continuous experiment on BCG vaccination in the United States. From experiences over a period of thirteen years, it can be stated unconditionally that BCG is safe, a fact that has ample verification the world over.¹⁹

The efficacy of the vaccine has been well documented in this study. In newborn infants of the noncontact group, the tuberculosis rate per thousand person-years was 6.46 for the controls as compared with 1.95 for the vaccinated, or 3.31 times greater for the controls. Considering the 1,159 siblings followed for about 2,800 person-years in the vaccinated and control groups, the rate was 5.29 times greater in the nonvaccinated (table 4). The death rate for the noncontact group was 0.17 for the vaccinated and 1.16 for the controls, or 6.8 times greater in the nonvaccinated. In the contact group the proportions were even more in favor of the vaccinated; the tuberculosis rate was 4.56 times higher in the controls and the death rate was 17.60 for the controls against zero in the vaccinated. Because the populations in the groups being compared are similar, this being especially true for the sibling group, the differences in the groups are highly significant from a statistical standpoint.

In an extensive study in Indians, ages of subjects being 1 to 20 years, over a six year period in which no isolation was effected before or after vaccination, the rate per thousand person-years was 4.7 as compared to 24.3 for the controls (Aronson and Palmer^{19a}). Ferguson^{19b} of Canada found that in nurses the ratio of vaccinated negative reactors as compared with nonvaccinated negative reactors was 1 to 4.27. His "controls," however, were from a five year period immediately preceding the initiation of vaccination. No isolation was practiced after vaccination. These studies are cited to demonstrate the results obtained in this country following parenteral administration of the vaccine. They cannot be compared with the work being reported in that the age groups and races are different.

Not only were the morbidity and mortality from tuberculosis appreciably reduced after vaccination, but the extent, severity, duration and sequelae of the pulmonary lesions when they did occur in the vaccinated differed from those of the nonvaccinated. In the former, such lesions were less extensive, of shorter duration and calcified earlier.

The vaccination strives to initiate and maintain a positive tuberculin reaction in the recipient. The question of whether this is desirable has been discussed. The protective action of a naturally produced primary complex that is well healed was well brought out by a survey made by one of us^{19c} and more recently by Marc Daniels for the Prophit Tuberculosis Survey of Great Britain.^{19d} In some twenty reports the world over, the incidence of tuberculosis developing in student nurses (one report included other students) was found by him to be 2.1 per cent (173 cases of 8,202) in those initially positive in reaction to tuberculin as compared to 5.8 per cent (278 out of 4,832) in those originally negative in reaction to tuberculin. In his own study of Great Britain there were 2,120 nursing students originally positive in reaction to tuberculin in 43 of whom, or 2 per cent, tuberculosis developed, against 27 out of 452 negative reactors, or 6 per cent, in whom the disease developed. In children a positive tuberculin reaction following infection with virulent tubercle bacilli may signify a progressive incipient lesion not indicated early by roentgenograms, as well as a current tuberculous environment with opportunities for repeated exposure. In young adults a positive reaction is more likely to indicate a healed primary lesion. It can readily be understood why a positive tuberculin reaction in all children, if caused by natural infection, offers a

19. (a) Aronson, J. D., and Palmer, C. E.: Experience with BCG Vaccine in the Control of Tuberculosis Among North American Indians, *Pub. Health Rep.* 61: 802-820, 1946. (b) Ferguson, R. G.: BCG Vaccination in Hospitals and Sanatoria of Saskatchewan, *Canad. J. Pub. Health* 37: 435-451, 1946. (c) Rosenthal, S. R.: Use of BCG Vaccination Among Medical and Nursing Students, *Hospitals* 17: 75-78, 1943. (d) Daniels, M.: Primary Tuberculous Infection in Nurses: Manifestations and Prognosis, *Lancet* 2: 165-170, 201-204 and 244-246, 1944. Footnotes 1 and 2.

prognosis. It would thus seem logical to substitute BCG, which is avirulent and in which the dose can be controlled, for virulent uncontrollable natural infection.

Another timely question is: What portion of our population should receive BCG vaccination? This and other studies indicate that for the time being, at any rate, those who benefit most by the vaccination are susceptible races (such as Negro and Indian) and those unduly exposed to tuberculosis of all races, in all age groups. It is again stressed that those who are vaccinated should have a period of at least one month before and after vaccination when there is no direct contact with virulent tubercle bacilli.

It has been stated that the decline in the death rate from tuberculosis in the United States has been so precipitous (from 194.4 to 40.1 per hundred thousand in 1900 and 1945 respectively)²⁰ that no further measures are needed to reduce the incidence of the disease other than those that are already in practice. In 1926 the rate for 1940 was predicted to be 20 per hundred thousand²¹; in 1941 it was predicted that substantial elimination of the disease was in sight by 1960.²² These predictions have fallen pitifully short of their goal. Granted that the death rate from tuberculosis for all ages is seventh on the list of deaths from all causes, between the highly productive ages of 18 to 40 years it ranks first. Some supplement, therefore, is definitely needed to augment our present methods of tuberculosis control.

The need for BCG vaccination will probably become more and more important as the incidence of tuberculosis drops, for we may again approach a relatively virgin soil in human beings for the tubercle bacillus. What may happen in a susceptible people is illustrated in a small tuberculosis epidemic that occurred in a secondary girls' school in Denmark in pupils aged 12 to 19 years.¹⁰ In January and February of 1943 an influenza-like epidemic broke out, and because there was associated erythema nodosa, tuberculosis was suspected. Fortunately, a tuberculosis control program had been in effect for some years, and the status of each pupil was known as regards the tuberculin reaction and roentgenogram of the chest. Before the outbreak it was known that of the 368 students, 130 were tuberculin positive in reaction, and 105 tuberculin negative, and 133 had been vaccinated with BCG. Of the 105 tuberculin-negative reactors, 70 converted during a period of a few months; of the 70, 41 showed roentgen changes, and of the latter tubercle bacilli were demonstrated in 37. There were 7 cases of definite pulmonary disease, or 6.7 per cent. Of the 133 vaccinated with BCG, there was pulmonary disease in only 2, or 1.5 per cent, whereas in the naturally positive reactors there were 4 cases, or 3.5 per cent. The source case was found to be a female teacher in whom minimal processes were demonstrated in one apex together with a positive gastric lavage. She taught class in a badly ventilated basement room. It is of interest that the rate of conversion was high not only in those pupils whom this teacher taught, but also in those pupils who occupied the same room but were not in contact with the teacher in question. The cases

of genuine pulmonary tuberculosis, of which there were 13, practically all occurred in the teacher's own class (12 out of 13). Better than 50 per cent of all the pupils in the initially tuberculin-negative, BCG-vaccinated and initially tuberculin-positive groups were exposed to the infected teacher. The percentage of conversion in the originally tuberculin-negative reactors was 86.8 per cent for those in contact with the teacher and 58.5 per cent for those in her classroom only.

In vaccinated adults and children in the Tice Laboratory study, no pulmonary tuberculosis occurred after three to seven years, whereas the expected morbidity rate was noted in the controls. This is a preliminary report for these groups.

The persistence of the tuberculin reactivity following a single vaccination in newborn infants was almost universal up to three and one-half and four years and practically 80 per cent after six and one-half years. In young adults it was 88.6 per cent after three years. It cannot be definitely stated that the results obtained in this study as far as the reaction to tuberculin was concerned were due entirely to the vaccination, as a high degree of conversion occurred in the controls soon after they entered this study.

The application of the vaccine by the multiple puncture scarification method has minimized the complications to a negligible level. This, plus the fact that the vaccine and the scarifying needle are put up in capillary tubes much the same as for vaccinia, makes this form of vaccination admirably suited for general use.

The United States Public Health Service has selected the Tice Laboratory as the central one for the production of BCG for its use. In this capacity the Tice Laboratory has supplied vaccine for the government BCG vaccination programs in Georgia and in Michigan.

SUMMARY

The application of BCG vaccination to all age groups is a safe and effective procedure.

In 2,831 newborn infants living in the poorest districts of Chicago but not in household contact with tuberculosis, there were 11 cases of tuberculosis in the vaccinated against 39 in the controls. The rate per thousand person-years was 3.31 times as great in the controls as in the vaccinated. There was 1 death from tuberculosis in the vaccinated against 7 in the controls, or a difference in the rates of 6.8 times.

In 1,159 siblings the tuberculosis rate per thousand person-years was 5.29 times as great in the controls as in the vaccinated.

Among 256 newborn infants, when tuberculosis was present in the household and when isolation in foster homes was practiced in the controls and vaccinated alike, there were 2 cases of tuberculosis in the vaccinated as compared to 5 in the controls. The rate was 4.56 times as great in the controls. There were 4 deaths in the controls and none in the vaccinated.

Considering the noncontact and contact groups as a whole, there were 13 cases of tuberculosis with 1 death in the vaccinated group as compared to 44 cases of tuberculosis with 11 deaths in the controls.

In a preliminary report on children in a federal housing project, in nursing and medical students and in patients of all ages in a mental institution, there were no cases of pulmonary tuberculosis in the vaccinated group followed for three to seven years. The expected tuberculosis rate was present in the control groups.

20. Linder, F. E., and Grove, R. D.: Sixteenth Census of the United States: Vital Statistics in the United States 1900-1940, United States Department of Commerce, Bureau of the Census, 1943. Patterson, R. G.: The Evolution of Official Tuberculosis Control in the United States, Pub. Health Rep. 62: 336-341, 1947.
21. Krause, A. K.: Tuberculosis the Fifth Cause of Death in United States, Tubercle 7: 442-448, 1926.
22. Dublin, L. I.: 1941 Closes with Distinctly Good Health Record, a per-
nate 14: 35-37, 1942.

By the use of the multiple puncture method, practically all complications were avoided; tuberculin reaction conversion was rapid (within one month) and universal.

A positive tuberculin reaction following a single vaccination was present in 92.6 per cent after three and one-half to four years and 79.85 per cent after six to six and one-half years in children vaccinated at birth and 88.6 per cent in student nurses at the end of their training, three years after vaccination.

ROLE OF TRANSFUSION IN THE ETIOLOGY OF ERYTHROBLASTOSIS

A Warning to Physicians

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Since the role of the Rh factor and isoimmunization in the production of erythroblastosis was first pointed out by Levine¹ and Wiener² more than seven years ago, this phenomenon has been of great concern to the physician and layman alike. It is amazing that such widespread interest should be centered on a disease which is extremely rare, since clinically recognizable erythroblastosis fetalis probably does not occur in the usual obstetric clinic in more than 1 in 300 deliveries; and, inasmuch as the infant mortality from this disease is in the neighborhood of 50 per cent, it can be estimated that the chances of an infant dying from this condition are less than 1 in 600 deliveries. The theory enunciated by Levine is simple and straightforward. If an Rh-positive man is married to an Rh-negative woman, which combination makes up about 12 per cent of the marriages, the infant will in the majority of instances be Rh-positive. The woman, being Rh-negative, is capable of being sensitized or producing antibodies to the Rh-positive cells of her unborn child and, thus, when these antibodies cross the placenta they hemolyze the blood of the infant, producing the varied manifestations of erythroblastosis. The immunology of isoimmunization and the genetics of the Rh factor have provided a fertile field for many investigators whose names are well known. A point which has been mentioned only casually by Levine³ and Diamond,⁴ but has not received the emphasis it deserves, is the role of transfusion in the production of this syndrome. This is all the more pertinent because of the recent development of blood banks and the more and more frequent use of transfusions. The great increase in the number of transfusions given at the Johns Hopkins Hospital is illustrated by the fact that 1,100 transfusions were given in 1939 as compared with 5,585 in 1946, a fivefold increase.

There are but two ways by which an Rh-negative woman can be sensitized to Rh-positive cells and thus give birth to an erythroblastotic child. The first of these is by repeated bearing of Rh-positive children.

This process gives her a gradually ascending titer of Rh antibodies, producing after several pregnancies mild and then more and more severe erythroblastosis. In such an event her first and often her second child are spared. The second means by which such a woman may become sensitized is by the administration of an Rh-positive transfusion. This will produce no outward reaction if she has not been previously immunized but serves as a much more powerful immunizing agent than the repeated bearing of Rh-positive children. Even a small transfusion will give a high and persistent antibody titer. Women so sensitized produce Rh-positive children with the severest form of erythroblastosis who usually do not survive. If they are in the 38 per cent who have homozygous Rh-positive husbands, they will be fortunate indeed to have 1 living child. Since 1937 there have been 27 cases of erythroblastosis in the Department of Obstetrics of the Johns Hopkins Hospital. These are shown graphically in table 1. The incidence in that year was 1 in 1,732 deliveries, while in 1946 the incidence was 1 in 348 deliveries. It is doubtful that the diagnosis was missed during that period, and while the apparent increase in incidence

TABLE 1.—Incidence of Erythroblastosis, Johns Hopkins Hospital, 1937-1946

Year	Deliveries	Cases	One/Deliveries
1937.....	1,732	1	1,732
1938.....	1,935	0	.....
1939.....	1,576	4	469
1940.....	1,831	2	915
1941.....	1,701	2	852
1942.....	1,903	2	951
1943.....	1,880	2	940
1944.....	1,843	3	614
1945.....	2,020	4	505
1946.....	2,436	7	348
Total	19,160	27	710

may be due somewhat to selection of cases for admission, it must also be admitted that there may be a real increment in the incidence of the disease. Since the percentage of Rh negativeness in the population is fixed, such an increment must be due to an increase in the incidence of sensitization of the mothers, and such a phenomenon may well be related to the increased incidence of transfusion known to have taken place. Of the 27 cases of erythroblastosis, the 7 following gave a history of transfusion:

HISTORIES OF CASES

CASE 1.—The patient was a 40 year old para 3-3-0-0-1.⁵ Her first child was delivered in 1927 by cesarean section because of premature separation of the placenta. The child was never in good condition and died at 18 months of life. After the operation the patient received one transfusion. Her second child was delivered in 1937 by low forceps. It weighed 2,370 Gm. and was jaundiced and anemic at birth. It received a few transfusions while in the hospital and was discharged weighing over 3,000 Gm. Soon after going home it was found dead in its crib; it presumably died of some cerebral damage due to erythroblastosis. Her last child was delivered in 1939 by low forceps and weighed 2,890 Gm. At birth it had 1,890,000 red cells per cubic millimeter and was jaundiced. It received multiple transfusions and survived and is living and well today.

CASE 2.—The patient was a 34 year old para 2-2-0-0-1 whose first pregnancy in 1942 terminated in a stillborn infant, the

From the Department of Obstetrics, Johns Hopkins University School of Medicine and the Johns Hopkins Hospital.

1. Levine, P., and Stetson, R. E.: Unusual Case of Intra-Group Agglutination, *J. A. M. A.* **113**: 126 (July 8) 1939.

2. Wiener, A. S., and Peters, H. R.: *Ann. Int. Med.* **13**: 2306, 1940. Landsteiner, K., and Wiener, H. S.: *Proc. Soc. Exper. Biol. & Med.* **43**: 22, 1940.

3. Levine, P., and Waller, R. K.: *Blood* **1**: 143, 1946.

4. Diamond, L. K.: *New England J. Med.* **232**: 475, 1945.

5. The numbers following para indicate in order total pregnancies, full term infants, premature infants, abortions and living children.

fetus having died in utero on the day before the onset of labor. She had a postpartum hemorrhage because of an adherent placenta and was given one blood transfusion. She was Rh-negative and her husband homozygous Rh-positive. Her second pregnancy in 1944 terminated in a living infant which had pronounced erythroblastosis with anemia and jaundice. This infant was successfully treated by repeated transfusions and is now living but is spastic. She was seen for this pregnancy at about the tenth week, at which time she showed blocking antibodies (4 plus) with glutinins of 96 units in plasma. Because of the uncertainty of another erythroblastic child the pregnancy was interrupted.

CASE 3.—The patient was a white primigravida aged 20 whose delivery was due by dates in December 1945. She was Rh-negative and her husband was homozygous Rh-positive. She received two transfusions for severe epistaxis in 1943. She was delivered by low forceps on November 10 of an edematous and jaundiced infant. The child did not survive more than two hours in spite of multiple transfusions.

CASE 4.—The patient was a 32 year old para 2-2-0-0-1. She was Rh-negative and her husband was homozygous Rh-positive.

CASE 6.—The patient was a 30 year old para 2-2-0-0-1 who was delivered in 1934 of a normal Rh-positive infant. She was Rh-negative and her husband homozygous Rh-positive. In 1941, after a pelvic operation, she was given one transfusion. During her present prenatal period blocking antibodies (3 plus) and a glutinin titer of 512 units in plasma developed. She was delivered at term in September 1945 of a living 3,230 Gm. infant which had congenital hydrops, jaundice and anemia. There were gross placental changes. The child did not survive more than two hours and the diagnosis of erythroblastosis was confirmed at autopsy.

CASE 7.—The patient was a 22 year old primigravida who at the age of 2 months received one transfusion of 170 cc. of blood for dysentery. She was Rh-negative and her husband was heterozygous Rh-positive. Her due date in the present pregnancy is March 1946. On February 22 she showed a glutinin titer of 24 units in plasma. She also had blocking antibodies (4 plus). She was delivered on February 28 of a 3,120 Gm. male infant in good condition. The baby became jaundiced at 5 hours and showed both agglutinins and glutinins in its plasma.

TABLE 2.—Effect of Transfusion on the Childbearing Career of Nine Patients, 1937–1947

Patient	Before Transfusion		Reason for Transfusion	Antibodies			After Transfusion			Future Pregnancies †
	Living Infants	Dead Infants		Agglutinin	Blocking	Glutinin *	Normal Infants	Erythroblastic Infants		
								Lived	Died	
1.....	0	1	P. S.‡	Not determined	Not determined	Not determined	0	1	1	0
2.....	0	1	P. P. H.§	0	++++	96	0	1 Spastic	0	0
3.....	0	0	Epistaxis	Not determined	Not determined	Not determined	0	0	1	0
4.....	1	0	Gastrectomy	0	++++	64	0	0	1	0
5.....	2	0	P. P. H.	0	++++	48	0	1	0	0
6.....	1	0	U. S.¶	0	+++	512	0	0	1	0
7.....	0	0	Dysentery	0	++++	24	0	1	0	50.0
8.....	0	0	Arthritis	0	++++	96	1	0	0	50.0
9.....	1	0	P. P. H.	0	++	3	1	0	0	50.0
Total.....	5	2	.....	..	.....	..	2	4	4	....

* Cells suspended in plasma.

† Prognosis for future normal children as determined by genotype of husband (homozygous 0 per cent; heterozygous 50 per cent).

‡ Premature separation of placenta.

§ Postpartum hemorrhage.

¶ Suspension of uterus.

Eight years prior to the present pregnancy she was delivered of a normal Rh-positive child. One year later she had a partial gastrectomy for a duodenal ulcer and at that time she had three transfusions. To each of these she had a severe reaction. Near term in the present pregnancy she had glutinin titer of 64 units and blocking antibodies (4 plus). She was delivered by low forceps of a 3,200 Gm. child in poor condition. The child had severe jaundice and low hemoglobin level and in spite of repeated transfusions did not survive. The diagnosis of erythroblastosis was confirmed at autopsy.

CASE 5.—The patient was a 38 year old para 3-3-0-0-3 who through a laboratory error was thought to be Rh-positive. Her first child, born in 1939, and a second, born in 1942, were both Rh-positive and were living and well. Following her second delivery she had a postpartum hemorrhage for which she received one transfusion. She was delivered at term by low forceps of a 3,120 Gm. child in November 1946. The child was in poor condition and showed decided pallor and some jaundice at birth. The diagnosis of erythroblastosis was made and confirmed by examination of the infant's blood. On reexamination of the patient she was found to be Rh-negative and her husband was homozygous Rh-positive. She had a glutinin titer of 64 units. The child was severely ill and after receiving multiple transfusions and a long hospital stay left the hospital in good condition.

The jaundice was never severe and serious anemia never developed. It was discharged from the hospital without requiring any transfusion.

The summary of these cases can be seen in table 2. The following 2 cases represent Rh-negative women with heterozygous Rh-positive husbands and a carry-over of agglutinins from the transfusion. They are added to table 2 although they gave birth to normal Rh-negative infants.

CASE 8.—The patient was a 27 year old primigravida who was given two blood transfusions for anemia and arthritis in 1942. She was Rh-negative and her husband was heterozygous Rh-positive. In addition to the transfusions in 1942 she was given another transfusion in 1945, at which time she had a severe reaction with hematuria. During this pregnancy a glutinin titer of 192 units developed, and she had blocking antibodies (4 plus). She was delivered at term in November 1946 of a 3,480 Gm. infant which was Rh-negative and which showed no erythroblastosis.

CASE 9.—The patient was a 26 year old para 2-2-0-0-2 who was Rh-negative and whose husband was heterozygous Rh-positive. She was delivered in 1944 of a normal infant which is living and well. The delivery was followed by a postpartum

hemorrhage for which she received one transfusion. During this pregnancy she showed blocking antibodies (4 plus), but more than 12 units of glutinin never developed. She was delivered at term in January 1947 of a 3,090 Gm. Rh-negative infant in good condition.

Nine Rh-negative women are presented who had received previous blood transfusions and who subsequently delivered children with erythroblastosis or in whom antibodies developed which endangered their future childbearing careers. These 9 women had had 5 normal children prior to their transfusions but had only 2 normal infants thereafter. Both the normal children born after transfusion were Rh-negative, these women having heterozygous husbands. The patients with homozygous mates had no normal children after transfusion, and of the 8 erythroblastotic infants born to them the expected survival of 50 per cent occurred. Hence the subsequent childbearing of all these patients had been seriously jeopardized, especially those with homozygous husbands. At least 1 of these latter has requested and received sterilization for this reason.

It might well be argued that all but 3 of these patients had one or more pregnancies prior to the transfusion

TABLE 3.—Interval Between Transfusions and Birth of Erythroblastotic Child in Seven Patients

Patient	Age at Transfusion	Year of Transfusion	Number of Transfusions	Interval to Birth of Erythroblastotic Infants, Years
3.....	17	1943	2	2
2.....	30	1942	1	2
5.....	34	1942	1	4
6.....	25	1941	1	5
4.....	25	1939	3	7
1.....	21	1927	1	10
7.....	2 months	1925	1	21

and that the pregnancy alone might well be sufficient to immunize them. Certainly this fact cannot be denied, but it is interesting to note that a history of previous transfusion occurs in but 2 per cent of our patients, while in the 27 instances of erythroblastosis a history of transfusion was present in 7 women or 26 per cent; and all in all the evidence is strong that transfusion does play an important role in the production of erythroblastosis. With the increased use of transfusion the chance of unwittingly administering Rh-positive blood to Rh-negative women is definitely increased. Since such transfusions may be disastrous to future childbearing, even though many years may intervene, they can only be regarded as reprehensible; and in our opinion a high degree of negligence may be charged if transfusion is ever given to a female child, or woman in the childbearing age, without first determining the Rh compatibility. In cases of dire emergency when time does not permit Rh determinations, only Rh-negative blood should be given.

CONCLUSION

The obstetric experiences of 9 Rh-negative women are reviewed who gave histories of previous blood transfusions. As the result of these transfusions the subsequent childbearing careers of these patients were gravely jeopardized. There is need to reemphasize the fact that Rh compatibility should be determined for all females prior to transfusion and only Rh-negative blood should be used in negative cases.

KALA-AZAR

Report of a Case Showing Unusual Leukocyte Response and Prolonged Incubation Period

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Prior to the onset of World War II, kala-azar (visceral leishmaniasis) was a disease discussed only by those few who specialized in tropical medicine and by members of teaching institutions when presenting cases of splenomegaly for differential diagnosis. In the latter instance, kala-azar was usually discarded as a possible diagnosis because the patient had never been out of the United States. Today this may not be true. During the recent war and continuing even to the present time several hundred thousand American troops were and are stationed in the several parts of the world where kala-azar is endemic, the most important of which are Eastern India, Burma, Northeastern China, Southern Italy and the Mediterranean coast of North Africa. Because of this and because the incubation period of the disease may be prolonged, the possibility of the occurrence of clinical kala-azar among former servicemen is more than theoretic.

Kala-azar is caused by the protozoan organism *Leishmania donovani*. It is agreed by most workers that the organism is transmitted to man by the bite of one of several species of the sandfly. On culture the organism develops in a flagellate form, while in man the organism appears as the Leishman-Donovan body. Strong¹ described this form as "round or oval bodies 2-5 microns in diameter. The nucleus is relatively large and peripherally placed; the kinetoplast is smaller, rod-shaped, or oval, and set at a tangent to the nucleus. A short, slender filament, the axoneme, is sometimes seen extending from the blepharoplast to the periphery. In a Romanowsky stain, the cytoplasm is faintly blue, the nucleus appears as a mass of bright red granules, and the kinetoplast is deep reddish purple."

Clinically there is no typical picture. The fever may be alternating, remittent or intermittent. In some cases, however, there is a double or triple daily rise in the temperature, which is said to strongly suggest the diagnosis of kala-azar. It has also been observed in this disease that a patient may have a temperature of as much as 102 F. and state that he feels well. The onset of the disease may be sudden with high temperature, chills and vomiting, or it may begin gradually with a low grade fever and relatively mild general symptoms. The onset may be easily confused with typhoid or malaria, more particularly the latter, as malaria is endemic in many of the areas where one may become infected with kala-azar. The incubation period varies from ten days to eighteen months. The disease produces progressive loss of weight with noticeable wasting of the muscles. Enlargement of the spleen does not usually occur until after the first month of the disease.

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NOTE: The Department of Pathology, Baylor University School of Medicine, assisted in obtaining the photomicrograph of the bone marrow specimen in this case.

1. Strong, R. P.: *Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases*, ed. 7, Philadelphia, The Blakiston Company, 1944, vol. 1, pp. 229-319.

The hemogram is said to offer some aid in the diagnosis of kala-azar. There is anemia present, usually becoming evident after the first month of the disease. The most dramatic changes occur in the white cell count. The total number of white blood cells is greatly reduced—in the majority of cases to less than 3,000 per cubic millimeter. The differential picture reveals a reduction in the polymorphonuclear leukocytes and an increase in the number of the large mononuclear cells and lymphocytes. However, in the case to be reported there was a decided shift to the left in the differential count. Another important finding is the alteration in the ratio of the white blood cells to the red blood cells. The normal ratio of 1:666 or 1:750 is only rarely observed. In cases of kala-azar the ratio of these cells is usually in the range of 1:1,000 or 1:1,500.

Blood chemical studies reveal an elevation of the globulin fraction of the blood serum. The euglobulin fraction is often considerably elevated and may account for 40 to 50 per cent of the total globulin. The formaldehyde gel test is positive in result in cases of well established kala-azar and gradually reverts to normal as recovery ensues. A similar reaction with a

oxalate, and after the cells have been spun down, the buffy layer of leukocytes may be inoculated on the mediums. In culture the parasite develops in the flagellate form. It has been suggested that culture be attempted in any case in which the diagnosis is suspected.³

Several pentavalent antimony compounds are available for the treatment of kala-azar. Many workers prefer ethylstibamine, as it is reported to be less toxic than other drugs and its therapeutic efficiency is high. This drug may be given intravenously or intramuscularly, the intravenous route being preferred. The first dose should be 0.1 or 0.2 Gm., being increased to 0.3 Gm. as a maintenance dose. The injections may be given daily or less often, depending on the reaction of the patient. Total dosage recommended varies from 3.5 Gm. to 5 Gm. The larger figure may be exceeded in cases in which the disease is more resistant to treatment. The drug is relatively safe, but certain reactions may be observed, the most common of which are nausea and vomiting that occur shortly after the injection. If the patient remains at complete bed rest and does not eat for one to two hours after the injection.

Variations in Peripheral Blood Picture

Date, 1946	Red Cells	White Cells	Hemo-globin, %	Baso-phils	Eosino-phils	Myelo-cytes	Juvenile	Stabs	Seg-menters	Lympho-cytes	Mono-cytes
September 23	.....	1,800	78.	..	3	3	28	22	13	29	2
September 24	4,470,000	2,400	81	1	..	..	44	14	5	30	4
September 30	4,650,000	5,000	82	3	..	..	17	23	18	36	3
October 1	4,600,000	2,150	79	2	1	5	14	23	14	37	4
October 3	4,450,000	5,000	85	1	..	..	1	29	44	20	5
October 11	4,500,000	4,300	85	3	2	..	1	9	41	35	9
October 18	5,110,000	8,100	85	2	20	..	2	2	34	38	2
October 25	5,430,000	5,500	89	2	19	..	..	1	29	33	11
November 1	5,020,000	5,850	88	..	2	..	..	..	53	41	4
December 6	4,970,000	5,150	97	2	4	..	..	2	33	55	4
September 26	Platelets 111,800										
September 25	Bone marrow:	Premyelocytes 1.5%; myelocytes 8.0%; juveniles 31.5%; bands 12.0%; segmenters 9.0%; lymphocytes 11.5%; normoblasts 23.5%; megaloblasts 1.5%; eosinophils 1.5 %									

pentavalent antimony compound such as ethylstibamine ("neostibosan") may give additional presumptive evidence for the diagnosis of kala-azar.

There is only one means for the positive diagnosis of this disease and that is to demonstrate the causative organism in tissue taken from the patient. In the vast majority of patients this is simply and easily done if the possibility of such a diagnosis is kept in mind and searched for. The most simple and least dangerous procedure is needle aspiration of the sternal bone marrow. This technic is practically devoid of danger and if properly done will demonstrate the parasites in a high percentage of cases. An alternative to this procedure is the surgical biopsy of the sternum, the specimen of marrow being obtained after the sternum has been trephined. Splenic puncture is generally conceded to give the highest number of positive smears, but this technic presents definite hazard to the patient, and, in cases in which the spleen is not palpably enlarged, it is almost impossible to perform. Meleney² stated that aspiration of the liver demonstrates the organisms in a high percentage of cases and claimed that the procedure is not unduly dangerous if carefully and properly performed. Demonstration of the parasites in the peripheral blood is reported but is infrequent. Culture of the organisms on Nicolle, Novy and McNeal mediums may be done, material obtained by any of the procedures mentioned being used. Also a specimen of blood may be obtained under sterile technic in

these symptoms will often be minimized. If vomiting persists, smaller doses of the drug should be given. Symptoms resembling anaphylactic shock have been reported, usually after several injections have been given. Urticarial rash, laryngeal edema, cyanosis and signs of asthma may develop. Epinephrine will relieve these symptoms, but since these symptoms, which may result after the use of any of the antimony compounds, will often recur when that particular drug is again administered, it has been suggested that a different antimony compound be used to complete the treatment.

REPORT OF A CASE

A pilot officer, aged 25, was admitted to the hospital on Sept. 21, 1946. Symptoms began September 7 with mild generalized malaise and mild intermittent pain in the left upper part of the abdomen. His appetite decreased and he noted increasing fatigue. He reported to his station dispensary on September 16 because of the progression of these symptoms. Acetylsalicylic acid, acetophenetidin and caffeine tablets were prescribed. On September 18 a roentgenogram of the chest was reported normal. The morning of September 19 the patient felt somewhat improved, but that afternoon he noted a cold tingling sensation in his hands, and shortly thereafter a chill developed, after which his oral temperature was 104 F. Without laboratory studies the patient was treated with quinacrine, 0.1 Gm. three times daily. At about 2 a. m., September 20, he had a second chill followed by vomiting. The vomitus consisted of the food eaten at the previous evening meal. He had two diarrhea stools and there were repeated chills approximately every six hours

2. Meleney, H. E.: Early Diagnosis of Kala-Azar, J. A. M. A. 129: 150-151 (Sept. 8) 1945.

3. Packchianian, A.: Leishmaniasis: Cultivation of Leishmania Tropica from Two American Soldiers Who Had Returned to the United States from Near East, J. A. M. A. 129: 544-547 (Oct. 20) 1945.

until the morning of September 21, when he again reported to his dispensary. Oral temperature at this time was 101 F., and he was then hospitalized with a presumptive diagnosis of malaria. There had been weight loss of 20 pounds (9.1 Kg.) in the two weeks prior to hospitalization.

Past History.—He had experienced no similar symptoms prior to the onset of the present illness. He served overseas as a fighter pilot in the China-Burma-India theater from December 1943 to April 1945. There was no history of previous attacks of malaria. He experienced one episode of diarrhea lasting one week in May 1944 while stationed in India. No specific etiologic agent was found, and the diarrhea responded to nonspecific treatment.

Examination.—The patient was acutely ill and somewhat emaciated, and showed recent loss of weight. There was a slight injection of the membrane of the throat and a mild gingivitis was present. There was no nuchal rigidity; no evidence of superficial lymphadenopathy, rash or petechial eruption. The heart was normal, and the lungs completely clear. Blood pressure was 110 systolic and 64 diastolic. The abdomen was soft and flat, and neither the liver nor the spleen was palpated. No abdominal masses were evident. There was slight tenderness on deep palpation in the left upper part of the abdomen. The remainder of the physical examination revealed no abnormalities.

Quinacrine was continued, 0.1 Gm. three times a day, in spite of a negative malaria smear, because it was felt that the low initial dosage given this patient may have cleared the parasitemia and yet have been insufficient to cause a remission of clinical symptoms. On September 23 there was a total white blood cell count of 1,800 with 29 per cent lymphocytes, 2 per cent monocytes, 13 per cent segmented polymorphonuclear cells, 25 per cent band forms, 28 per cent juveniles and 3 per cent myelocytes. On this date a second study for malaria failed to reveal the presence of parasites. Because of this and because the blood picture indicated possible leukemia and/or severe infection as yet undiagnosed, quinacrine was discontinued; penicillin, 50,000 units intramuscularly every three hours, and liver extract, 3 cc. daily, were administered. Blood counts continued to show profound leukopenia with a considerable shift to the left in the differential picture. There was only mild anemia noted at any time. The table shows the data on the blood during the entire period. Repeated examinations of the urine, including a test for Bence-Jones protein, revealed no abnormality. An aspiration biopsy of sternal bone marrow was made on September 25, and stained smears revealed a normal differential cell count. No organisms were seen in the five slides examined. A platelet count on September 26 was 111,800 (normal 250,000 to 500,000). The patient's temperature continued on a septic course (fig. 1). Many blood cultures remained sterile after prolonged incubation. An organism having the carbohydrate reaction of *Salmonella eastbourne* was isolated from the stool on two occasions. Agglutinations for typhoid, paratyphoid, undulant fever and heterophil antibody were negative on September 24 and September 30. On the latter date the Weil-Felix reaction and agglutination with *Pasteurella tularensis* were also negative. On October 2, roentgenograms of the chest and abdomen were normal—there was no evidence of enlargement of the spleen or liver. On October 3, a biopsy specimen from the upper part of the sternum was obtained by trephine. Several impression smears were made from the marrow, and after staining with a diluted Giemsa stain, examination revealed many intracellular and extracellular organisms which were typical of the Leishman-Donovan bodies of kala-azar (fig. 2). Treatment with ethylstilbamidine was begun on October 5, the patient receiving 0.2 Gm. intravenously on this date. Daily thereafter, through October 20, he received 0.3 Gm. intravenously. A total of 4.7 Gm. was given; no adverse effects were observed.

Response to treatment was dramatic; the temperature returned to normal after three days, appetite greatly improved—four meals daily were enjoyed—and there was a progressive gain in weight from 130 pounds (59 Kg.) to 152 pounds (68.9 Kg.). The table shows the improvement in the peripheral blood. Penicillin was continued until October 5, as a precaution against secondary infection. Attempts to culture marrow blood and

peripheral blood on mediums developed by Nicolle, Novy and McNeal were unsuccessful. On December 3 the patient was returned to duty; no evidence of disease was present. He was, however, instructed as to the symptoms and signs of relapse of the disease and warned of the possible late occurrence of post-kala-azar cutaneous leishmaniasis.

COMMENT

After the correct diagnosis was made in this case, a more complete history of the specific areas visited during the patient's tour of overseas duty was obtained in an attempt to estimate the incubation period. He was in several areas in which kala-azar is known to be endemic. In May 1944 he was located on the south-east coast of India near the Burma border. From November 1944 until February 1945 he was in the vicinity of Sien, China. This town is located just south of the bend of the Yellow River and is within the area of China where this disease is endemic. While returning to the United States via air transport the patient spent one day each in Abadan, Iran, and Cairo, Egypt. These cities are both located in areas where cutaneous leishmaniasis is endemic and where an occasional case of the visceral disease is reported. It is our belief, because of the longer period of exposure while this officer was stationed in China, that his disease was most likely contracted some time between November 1944 and February 1945. On this supposition, the

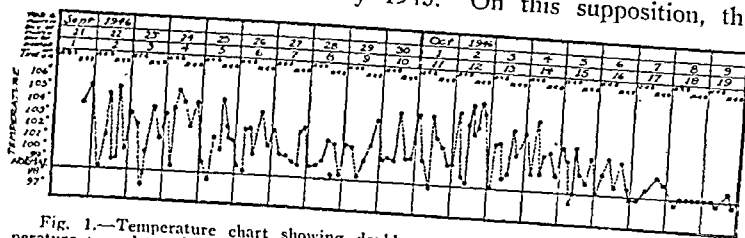


Fig. 1.—Temperature chart showing double and triple daily elevations. The temperature was determined at 12, 4 and 8 a. m., and 12, 4 and 8 p. m. (from left to right in each column). Treatment with ethylstilbamidine started on October 5.

incubation period in this case was at least nineteen months, if it is assumed that the patient became infected only shortly before he left this area. The patient was in Abadan on April 1, 1945 and in Cairo on April 2, 1945. He arrived in Casablanca in the western part of North Africa on April 3, 1945 and left this area by air on April 10, 1945, arriving in the United States on April 11, 1945. If the time from April 10, 1945, when the patient left the African continent and any possible source of infection, until the onset of symptoms on Sept. 7, 1946 is considered, an incubation period of approximately seventeen months is indicated. The prolonged period of incubation in this case is unusual, and we have been able to find only 1 such case previously reported.⁴

The possibility of prolonged periods of incubation in kala-azar serves to emphasize the importance of this disease in the United States. It must be strongly considered in cases of obscure fever in persons who have spent time in areas where kala-azar is endemic.

The second unusual feature of the case presented in this report is the considerable shift to the left observed in the differential white cell count. It is reported that this disease produces a relative lymphocytosis.⁵ This was never observed in the case under discussion, and

4. Napier, cited by Strong.¹

5. Since preparation of this paper, two reports have appeared in which cases of kala-azar with similar blood pictures have been observed: Waud, S. P., and Kruger, S.: Visceral Leishmaniasis: Report of a Case, *New England J. Med.* 236: 63 (Jan. 9) 1947. Ecker, H. D., and Lubitz, J. M.: Kala-Azar in the United States: Review of the Literature and Report of Two Cases; Stilbamidine Treatment, *Ann. Int. Med.* 26: 720-733 (May) 1947.

there was no evidence at any time of other infection which might have explained the blood picture observed.

The one typical finding in this case was the temperature course. It is said that two or three spikes in the temperature every twenty-four hours is only rarely observed in diseases other than kala-azar. Figure 1 clearly shows this finding on several days.

SUMMARY

A brief review of kala-azar is presented, showing its symptoms, signs, methods of laboratory diagnosis and treatment. An unusual case of kala-azar with an incubation period of at least seventeen to eighteen months and with unusual hematologic observations is reported. It is believed that this case will help to emphasize the fact that kala-azar is now a disease which must be considered in the differential diagnosis of fevers

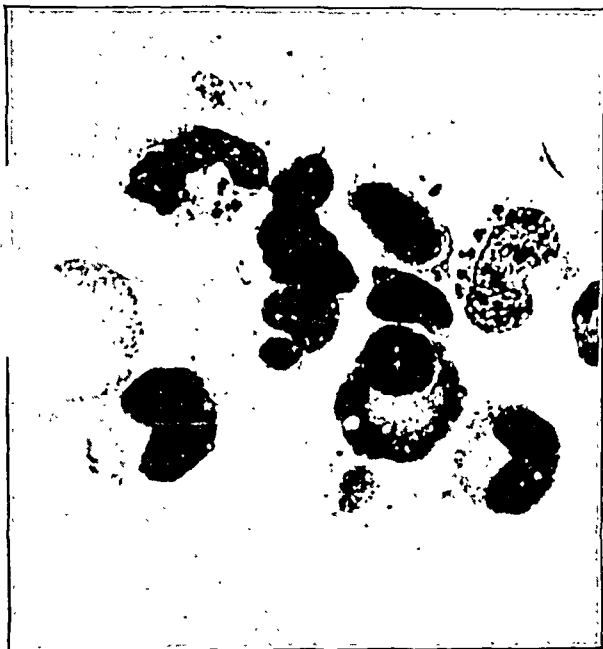


Fig. 2.—Photograph of bone marrow showing intracellular Leishman-Donovan bodies.

which may occur in patients living in the United States who give a history of spending time in any of the areas of the world where this disease is endemic.

Smallpox Vaccination and Encephalitis.—It is well known that encephalitis occasionally follows vaccination. When it is due to vaccination, it almost invariably occurs eleven to fourteen days later. It may occur up to thirty days later, but this is exceedingly rare. From the beginning of April, when the vaccination program was instituted, until the second week of June, 50 possible cases of encephalitis were reported to the Health Department. Four of these cases were ruled out as definitely not encephalitis. In the remaining 46 cases the diagnosis was considered probable. Eight of these 46 individuals died. A diagnosis of postvaccinal encephalitis can be made with certainty only after microscopic examination of the brain tissue. Brain tissue of the 8 fatal cases was examined, and in none of them were the characteristic lesions of postvaccinal encephalitis found. Autopsy showed that 2 of the deaths were caused by tuberculous meningitis, 1 by a brain tumor, 1 by coronary sclerosis, and 4 probably by cerebral lesions. The Health Department has had no proof of any death due to postvaccinal encephalitis in its vaccination campaign.—Weinstein, Israel, M.D., An Outbreak of Smallpox in New York City, *American Journal of Public Health*, November, 1947.

STREPTOMYCIN IN THE THERAPY OF GRANULOMA INGUINALE

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Streptomycin has been found to be active principally against certain gram-negative organisms and acid-fast bacilli. Its trial in the management of granuloma inguinale, while not entirely justified in view of the controversial concept of the nature of the pathogenic agent, was warranted on the basis that the need for a more effective and specific form of therapy of granuloma inguinale was greatly desired. Before the advent of the antibiotics the modern therapy of granuloma inguinale generally involved the use of one of a number of antimony compounds. These have varied from the intravenous injection of such antimonials as antimony potassium tartrate and "diramin" (an aqueous solution of the products resulting from the reaction between antimony catechol and triisopropanolamine in the presence of propylene glycol) to the intramuscular administration of the less toxic and more stable derivatives, such as lithium antimony thiomalate ("anthiomaline") and stibophen.¹

In addition, adjuncts to antimony therapy have been advocated and appear to accelerate healing. These have included local application of various preparations such as oxidizing agents (potassium permanganate washes) or spirocheticidal substances as 10 per cent neosarsphenamine in equal parts of cod liver oil and glycerine.^{1a} Other therapeutic measures have included the use of 20 per cent resin of podophyllum in olive oil applied for its escharotic activity on the granulation tissue, followed in turn by an epithelial stimulant such as scarlet red.² These additive measures, together with surgical treatment and irradiation, have often been necessary in the form of supplementary treatment to control the superimposed infection. The effectiveness of the employed therapeutic regimens when used either alone or in conjunction with one another decreases in direct proportion to the longevity of the lesion. The early lesions of granuloma inguinale respond well to therapy, and in rare instances ordinary hygienic measures may bring about a spontaneous cure.

It must be admitted that the antimonials will cause a regression and will result in abeyance of the disease in many patients with granuloma inguinale. However, a more rapid and propitious form of therapy was sought. The introduction of the various antibiotics led to their eventual trial in the management of this minor venereal disease. Thus, 1,000,000 to 2,000,000 units of penicillin has been administered to patients with no discernible benefit.^{3c} Similar observations on the

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1. (a) Greenblatt, R. B.: Management of Chancroid, Granuloma Inguinale and Lymphogranuloma Venereum in General Practice, *Ven. Dis. Inform.*, 1943, supp. 19. (b) Paggi, L. C., and Hull, E.: Metastatic Granuloma Venereum: Report of a Case, *Ann. Int. Med.* 20: 686-695 (April) 1944. (c) Greenblatt, R. B.; Deibert, A. V., and Fischer, S.: Treatment of Granuloma Inguinale with Diramin: A New Antimonial, *J. Ven. Dis. Inform.* 26: 238-239 (Nov.) 1945. (d) Goldberg, L. C.: Treatment of Granuloma Inguinale with Anthiomaline: Report of Case with Extragenital Lesion, *Am. J. Syph., Gonorr. & Ven. Dis.* 29: 608-610 (Nov.) 1945.

2. Tomskey, G. C.; Vickery, G. W., and Getzoff, P. L.: The Successful Treatment of Granuloma Inguinale with Special Reference to the Use of Podophyllin, *J. Urol.* 48: 401-406 (Oct.) 1942.

refractoriness of granuloma inguinale to penicillin have been reported in the literature.³ In contradistinction to the clinical observations with penicillin, *in vitro* studies have shown that penicillin in high concentrations was not without effect on the Donovan body.⁴ It has also been shown that the local application of tyrothricin to the exuberant tissue characterizing many lesions of this disease failed to exert any appreciable therapeutic effect.⁵ However, the eventual trial of streptomycin in contrast to the foregoing antibiotics has yielded the most promising outlook for the control of granuloma inguinale. Observations on the use and effectiveness of streptomycin in the treatment of granuloma inguinale have been presented in a preliminary report.⁶ In this paper our observations on streptomycin are extended and a more detailed description of the cases is presented.

PATIENTS

A total of 48 patients have received streptomycin for granuloma inguinale. There was a total of 32 male and 16 female patients, all Negroes and ranging in age from 19 to 70 years. Of these 48 patients, 35 had received some form of antimony therapy for periods of time varying from one month to ten years. Most of these patients had received inadequate treatment at sporadic intervals. Some reported cures or disappearance of the lesion for short periods of time following antimony therapy. However, despite the duration of previous treatment with antimony compounds, Donovan bodies were demonstrated either by spread or biopsy section from the lesions of all patients before initiation of streptomycin therapy. The remaining patients who had not received previous antimony treatment had been given other forms of therapy such as penicillin, arsenic, or one or another of the sulfonamide drugs because of faulty diagnosis.

DOSAGE

The dosage of streptomycin employed ranged from 3.3 Gm. to 60 Gm. with an average dose of 20 Gm. The drug was given in amounts varying from 0.3 Gm. to 4 Gm. per day in divided doses every four hours for a period ranging from five to sixty-two days. The drug was dissolved in sterile distilled water containing 25 to 30 per cent of 1 per cent solution of procaine hydrochloride. In the earlier stages of this study the dose was judged empirically and was based on the extent and duration of the lesion. However, the present plan has entailed the administration of 4 Gm. of streptomycin per day for a period of five days. The purpose of this mode of therapy was twofold in nature: (1) to provide for a rapid and effective method of treatment and (2) to administer high doses and maintain high levels of streptomycin in the patient, thereby preventing the development of organisms resistant or refractory to the antibiotic.

TOXIC EFFECTS

Toxic reactions were noticed in 4 patients receiving daily doses of 1 to 4 Gm. of streptomycin. However, in no case was involvement of the eighth nerve observed. Pruritus was observed in all 4 cases, and in 1 patient this was associated with an urticarial eruption on the

chest and extremities and a vesicular perioral dermatitis. Fifty milligrams of diphenhydramine hydrochloride, given twice a day, effectively controlled the pruritus in the 3 patients without the dermatitis, thereby permitting continuation of the streptomycin therapy. However, the patient exhibiting the dermatitis failed to respond to the same dose of diphenhydramine hydrochloride, and streptomycin therapy was advisedly discontinued. A fifth patient complained of a mild burning of the conjunctiva after having received a total dose of 3 Gm. of streptomycin over a ten day period. Administration of the drug was discontinued for four days, and with resumption of the same dose no untoward symptoms were noticed.

RESPONSE AND CLINICAL EFFECT

Frequent smears were taken from the lesions of the patients receiving streptomycin throughout the course of treatment. Negative smears were obtained within two to eleven days, or an average of six days (in 26 patients), after initiation of the streptomycin injections. However, the lesions clinically still showed evidence of granulation tissue. Microscopically it was observed that the streptomycin apparently caused disintegration of the Donovan bodies. On the other hand, we have frequently observed well preserved Donovan

Streptomycin in the Management of Granuloma Inguinale

Sex of Patient	No. of Patients	Average Total Dose, Gm.	Length of Treatment, Days	Healing After Therapy, Weeks	Follow-Up Study	
					Percentage	Weeks
Male.....	33	19.3 (3.6-60)*	14.6	2.9	63.7	9.1
Female.....	15	21.8 (3.3-94)	16.8	3.4	80.0	7.5
Total.....	48	20.2	16.5	3.0	69.8	8.5

* Figures in parentheses indicate dose range employed.

bodies in smears of the lesions in patients who have received stibophen two times weekly for several months. Donovan bodies were observed in the lesions of these patients despite the evidence of decided clinical improvement. The significance of these observations will be discussed later, and a more detailed account will be presented elsewhere in a report devoted to bacteriologic aspects of this problem. The patients treated with 0.3 to 1 Gm. of streptomycin per day were maintained on the antibiotic until few or no residual lesions were observed. However, the patients treated for five days with 4.0 Gm. of the drug per day still showed granulomatous lesions at the time that the streptomycin therapy was discontinued. Nevertheless, despite the lack of additional therapy, the lesions in these patients eventually showed complete healing, eight to twelve days after cessation of treatment. All the patients, especially those with extensive lesions, volunteered the information that within twenty-four to thirty-six hours after initiation of streptomycin therapy the pain or discomfort associated with the lesion was markedly reduced or absent. Some healing of the lesions was noted within twenty-four to forty-eight hours after the antibiotic had been administered. Healing was, at first, centripetal in nature.

RELAPSES

Since the inception of this study has been of relatively recent origin the follow-up studies have been, of necessity, short in duration. To date there have been three

3. Haserick, J. R.: Failure of Penicillin in Treatment of Granuloma Inguinale: Report of a Case, *Arch. Dermat. & Syph.* 52:182 (Sept.) 1945.
4. Turner, F. B.: Treatment of Seven Cases of Granuloma Inguinale with Penicillin, *M. J. Australia* 2:366-367 (Dec. 1) 1945.
5. Beveridge, W. I. B.: The Action of Antimony and Some Other Bacteriostatic Substances on *Donovania Granulomatis* Isolated in the Chick Embryo, *J. Immunol.* 53:215-223 (July) 1946.
6. Greenblatt, R. B., and Kupperman, H. S.: Unpublished data.
7. Greenblatt, R. B.; Kupperman, H. S., and Dienst, R. B.: Streptomycin in the Therapy of Granuloma Inguinale, *Proc. Soc. Exper. Biol. & Med.* 64:389-390 (April) 1947.

recurrences after therapy had been discontinued. Two of these patients had received less than 4 Gm. and 1 had received a total dose of 28 Gm. The lesion of this latter patient was almost completely healed, and after dismissal further healing occurred. However, there was a recrudescence of the lesion three



Fig. 1 (J. A.).—Granuloma inguinale of six years' duration in the genital area of patient. Note general destruction of genitalia by extensive granulation tissue.

months later. A second course of streptomycin therapy (1.5 Gm. per day for forty-one days followed by 4 Gm. per day for nine days or a total dose of 94 Gm. of streptomycin) was administered over a period of fifty



Fig. 2 (J. A.).—Granulomatous involvement of medial portion of left thigh and perianal area by extension of granuloma inguinale from the genital region.

days. Since no further progress toward healing occurred, it was concluded that the disease had become refractory to the antibiotic. Lithium antimony thiomalate therapy was then instituted in doses of 3 cc. injected intramuscularly six times a week for four weeks. Complete healing occurred with a total dose

of 72 cc. Follow-up studies in the patient are still in progress. She is to receive 3 cc. of lithium antimony thiomalate twice weekly for the next few months to prevent any further recurrence. Of the other 2 patients showing relapses after an initial course of therapy of less than 4 Gm. of streptomycin, recrudescence of the disease was noted within eight weeks after discontinuing the injection of the antibiotic. One patient received an additional course of treatment consisting of 4 Gm. of streptomycin per day given for eleven days. The lesion healed completely and there has been no evidence of a recurrence five weeks later. The other patient was also placed on 4 Gm. of streptomycin per day for eight days. Healing has occurred and the patient is now under observation.

REPORT OF CASES

CASE 1.—J. A., a Negro man 31 years of age, first noticed a lesion on the glans penis in 1941, six years before the present admission. The patient received a course of intravenous injection



Fig. 3 (J. A.).—Healed genital area three weeks after cessation of streptomycin therapy (cf. fig. 1).

tions at this time and some healing occurred. However, with further treatment the lesion continued to spread and heal alternately, so that eventually as a result of scar formation the penis was completely retracted and could not be recognized. Soon after the appearance of the penile lesion a pustule appeared in the suprapubic area. This area ulcerated and coalesced with the penile lesion to involve the genital region, medial aspect of the left thigh and the perineum. Despite intermittent antimony, arsenic and bismuth therapy the lesions slowly spread to their present proportions.

Examination showed a well developed poorly nourished Negro in apparent distress who could stand in the erect posture only with difficulty. A foul, acrid odor was associated with an extensive granulomatous lesion in the genital area (fig. 1). The lesions were extensive and characterized by a moderately proliferated red granulating base covered with a weeping, serosanguinous grayish exudate. There were no visible external genitalia, and the urinary meatus was camouflaged by the surrounding ulcerated area and could not be identified. The lesion involved the suprapubic area and left inguinal region, and extended down the medial aspect of the thigh to the perineum and perianal area (fig. 2). Smears made from the

lesions showed numerous Donovan bodies. The penis and scrotum while not apparent were covered by the granulation tissue (fig. 1). The patient was placed on 1 Gm. of streptomycin per day, administered in divided doses at four hour intervals. Smears made on subsequent days showed Donovan bodies in the lesion to be present only for the first five days

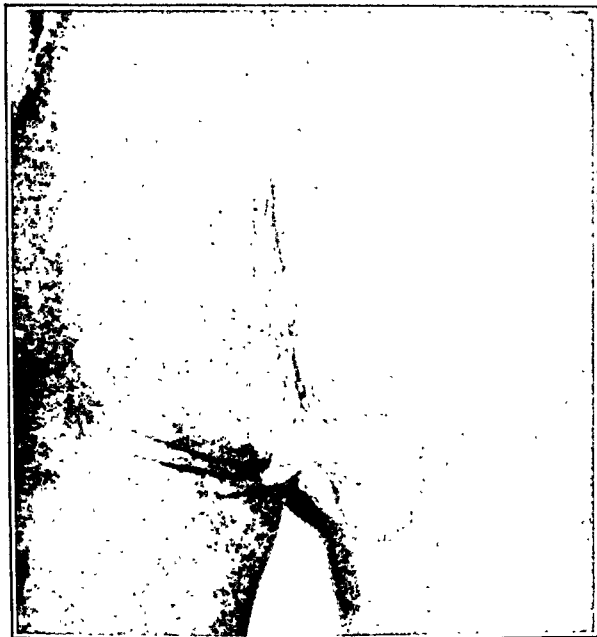


Fig. 4 (J. A.).—Healed perianal and perineal lesion observed after cessation of streptomycin therapy (cf. fig. 2).

of streptomycin therapy. Thereafter negative smears were obtained. The pain associated with the lesion was markedly reduced after the first day of treatment and completely absent after forty-eight hours. The patient received a total dose of 21 Gm. of streptomycin. At the time that the injections were discontinued small areas of granulation tissue were present. These were completely healed three weeks after cessation of streptomycin therapy (figs. 3 and 4). No recurrence has been observed sixteen weeks after treatment. After the streptomycin therapy had been discontinued the urinary meatus could then be seen in the healed area between the medial left thigh and inferior lateral portion of the infrapubic area (fig. 3). Future plastic surgery has been advised for repair and proper presentation of the penis and scrotum.

CASE 2.—L. M. F., a Negro woman 26 years of age, was admitted to the granuloma ward because of extensive lesions and scar formation of the pubic and perineal area. The initial lesion was noticed six years ago in the left inguinal region. The lesion spread from this area to the suprapubic region and by retrograde extension to the vulva and perineum. These areas were all at one time involved with the granulomatous lesion characterizing the patient's disease. She had received intermittent antimony therapy at different clinics over the last six years and, while improvement of the lesion was noticed, complete healing never was attained.

Examination showed a well developed and well nourished Negro woman exhibiting extensive scar formation and depigmentation in the inguinal and genital region. Granulation tissue was observed in one small lesion in the right suprapubic region extending down on the right labium majus to the perineum and perianal area with some extension up the inferior part of the left labium majus. There was marked depigmentation of both labia associated with elephantiasic enlargement of a brawny indurated nature. Smears made from the lesion showed numerous Donovan bodies to be present. The patient was placed on 0.3 Gm. of streptomycin per day for twenty-six days, or a total dose of 7.8 Gm. Healing was apparent after 2 Gm. had been administered. Complete healing was present

when the patient had received the total dose. Follow-up study of ten weeks has shown no recurrence.

CASE 3.—R. A., a Negro man 22 years of age, had noticed a small nodular swelling of the glans penis five years prior to his present admission. This lesion ulcerated and gradually involved the entire glans and the distal portion of the shaft. Soon after the development of the penile lesion similar ulcers appeared first in the right and then in the left inguinal region. The ulcerated areas became confluent by direct extension and spread inferiorly to the perineum and perianal area so that at one time the genital, inguinal and perianal area were one beefy red mass of granulation tissue. In addition, circular contact lesions developed on the medial aspect of each thigh. Soon after the beginning of the penile ulcers the patient was placed on antimony potassium tartrate, and finally stibophen was administered intermittently from 1942 to the present date. The antimony therapy induced sporadic healing in some sites with resulting scar and keloid formation. However, at no time were all lesions completely healed.

Examination revealed a well developed, poorly nourished Negro man in apparent distress and emitting a foul, pungent odor. There were extensive keloid formation and depigmentation in both the inguinal and pubic regions. The penis could not be recognized and was represented by a small tuft of granulomatous tissue pointing toward the left thigh. A linear mass of granulation tissue extended from the left inguinal region to the perineum. A circular contact granulomatous lesion was present on the medial aspect of the left thigh in an area where healing had previously occurred (fig. 5). There was also an area of granulation tissue on the right side between thigh and scrotum (fig. 5). The scrotum was completely retracted by keloid formation and the testis was pressed against the external abdominal ring. The ulcerated areas showed the typical granulomatous lesions characterizing granuloma inguinale. There was a small amount of superficial exudate on the typical



Fig. 5 (R. A.).—Active granuloma inguinale infection of genital area associated with erosion of penis.

beefy red granular base. Numerous Donovan bodies were demonstrated in spreads from the lesions. The patient was placed on 4 Gm. of streptomycin per day for a total dose of 20 Gm. The pain associated with the lesion was alleviated within twenty-four hours after the streptomycin injections had been initiated. Healing was evident within forty-eight hours and Donovan bodies could not be demonstrated in spreads made

from the lesion after the patient had received 16 Gm. of streptomycin over a four day interval. After cessation of injections appreciable granulation tissue was still evident. However, three weeks later complete healing had occurred, with only a small area of granulation tissue present at the region of the external urinary meatus (fig. 6).

CONCLUSIONS

1. Streptomycin was employed in the management of 48 cases of granuloma inguinale in doses ranging from 3.3 to 60 Gm., administered over a period of time ranging from five to sixty-two days. Healing occurred in all patients, either while the antibiotic was being administered or after cessation of therapy.

An average follow-up study of nine weeks has shown that the disease recurred in 3 patients; of these, 2 responded to a second course of therapy. In the third patient resistance to the drug developed; she was placed on an organic antimony compound. Some patients



Fig. 6 (R. A.).—Healed lesion seen three weeks after cessation of streptomycin therapy (cf. fig. 5).

have shown no recrudescence of the lesions four to five months after cessation of therapy.

A five day treatment schedule has been evolved. This is based on the administration of 4 Gm. of streptomycin per day or a total dose of 20 Gm. of the antibiotic over the five day period. Lesions were present after this therapy had been discontinued, but complete healing occurred within the next one to four weeks despite the fact that no additional drug was given.

The only toxic effects noted after administration of streptomycin were pruritus (4 cases) and urticarial dermatitis (1 case). No involvement of the eighth nerve was observed. The pruritus was controlled in 3 patients by the administration of diphenhydramine hydrochloride.

It is concluded that streptomycin gives promise of being the most effective drug in the control of granuloma inguinale and that only longer post-treatment periods of observation are necessary to establish this contention.

ADDENDUM

Since the presentation of this paper, an additional 43 patients have been treated with streptomycin, bringing the total to 91 cases. Analyses of the results of the complete series now show that of the 32 patients who received 2 Gm. per day or less of streptomycin over a period averaging twenty days there were 8 recurrences, 7 of which were retreated, with successful results in 5. The remaining 2 have become streptomycin resistant. Of the 51 patients treated with 4 Gm. per day for five days, there has been 1 recurrence which healed with retreatment. Seven patients received 4 Gm. per day for more than five days, i. e., six to ten days, with no relapses thus far. One patient was treated with streptomycin vaginal suppositories alone, 4 Gm. per day for four days, with complete healing. From our data, it appears that the administration of 4 Gm. of the drug per day for five days is the most satisfactory as well as the most economical method of treatment.

ABSTRACT OF DISCUSSION

DR. ROBERT R. KIERLAND, Rochester, Minn.: The results obtained by the authors are far superior to those obtained by any previous method of therapy available for this chronic and disabling disease. So outstanding are their figures that one may be tempted to use streptomycin as a "therapeutic trial" in cases of unproved but strongly suspected granuloma inguinale. These findings confirm or are confirmed by the independent investigation made by Barton and his associates (Barton, R. L.; Craig, R. M.; Schwemlein, G. X., and Bauer, T. J.: *Granuloma Inguinale Treated with Streptomycin: Report of Three Cases*, unpublished data) at the Chicago Intensive Treatment Center, the results of which were submitted for publication in September 1946. Their original series comprised 3 patients but they have since added more. The first 3 patients with proved granuloma inguinale received 20,000 to 30,000 units of streptomycin every three hours until a total dosage of 4,000,000 to 7,000,000 units had been received. There was evidence of rapid clinical improvement, while Donovan bodies could not be found in scrapings of tissue as early as ten days after treatment. Relapses occurred in 2 of these patients. Later, however, in 7 additional patients (Marshak, L. C.; Barton, R. L., and Bauer, T. J.: *Granuloma Inguinale: A Report of the Literature and a Report of Ninety-Seven Cases with a Note on Streptomycin Therapy*, unpublished data), the dose per injection was increased to 50,000 units and a total dosage of 6,000,000 to 10,000,000 units was given with no relapse as long as six months after treatment. It is entirely possible that the use of large doses of 4 Gm. daily for five days, advocated by the present authors, has added materially to the small incidence of relapse. The factors of optimal dosage, duration of treatment and the combination of streptomycin with other therapeutic agents will undoubtedly be determined in the future. The relative purity of streptomycin is a matter that has received much discussion as far as reactions are concerned. As purer forms of the drug are obtained the incidence of cutaneous reactions may be lowered. The appearance of the more serious toxic manifestations, such as nerve deafness and loss of labyrinthine function, may be due to the drug itself and is an indication for discontinuance of the drug. That this will be unusual is indicated by the fact that no serious toxic reaction occurred in this series of 48 cases. The original demonstration of the culture and propagation of *Donovania granulomatis* by Anderson and more recently by others leads the way for the *in vitro* investigation of streptomycin and other antibiotic substances.

DR. DONALD M. PILLSBURY, Philadelphia: This is the type of paper on which discussion is a pleasure, because the authors are competent observers, have maintained adequate and expert laboratory controls on the clinical diagnosis, report a significant

number of patients treated and are conservative in their statements of the results obtained. There seems no question that streptomycin in moderate doses has a strikingly favorable effect on the lesions of granuloma inguinale in most patients with this disease. Moreover, although the average time of follow-up observation in the authors' 48 patients is only nine weeks, it seems most probable that a majority of those treated have been cured. Certainly the results achieved are much superior even to those obtained with intensive daily stibophen therapy. Any one who has been associated for some years with a large clinic for venereal or dermatologic diseases inevitably comes to the conclusion that granuloma inguinale is one of the worst treated of all the diseases affecting the skin and subcutaneous tissues. The unfortunate patients with this disease are ordinarily not blessed with even average intelligence, and continuous treatment and adequate follow-up of them are difficult to accomplish. Furthermore, the lesions of the disease lack esthetic appeal to say the least, and few physicians and nurses will carry out the necessary diagnostic and local procedures with any enthusiasm. As a result, one regularly sees patients who have had intermittent treatment and who have drifted from one clinic to another, with increasing disability, mutilation and discomfort from the disease. Streptomycin therapy offers hope that most of these patients can be cured within a short period of treatment. Fortunately, the amounts of streptomycin which seem necessary are not of an order likely to produce a high incidence of serious reactions. The calculated risk is well justified. It must be kept in mind that streptomycin when administered over periods of weeks to months, is capable of producing severe reactions and permanent disability. In a study recently completed under the auspices of the Streptomycin Committee of the Veterans' Administration, and in other studies, it has been found that streptomycin may have definite toxic effects on the vestibular and/or acoustic portions of the eighth nerve, with a possibility of total deafness if the drug is continued, may produce irreversible renal damage, rarely may produce dermatitis reactions of the ninth day erythema type and, also rarely, may have dangerous effects on bone marrow function.

DR. HAROLD L. HIRSH, Washington, D. C.: Early this year we learned about the work of Dr. Kupperman and his associates and consequently undertook a study of the treatment of granuloma inguinale with streptomycin. We have completed the treatment of 17 patients. We used a total of 1 Gm. a day given intramuscularly in divided doses every four hours. Our results are almost identical with those reported by Dr. Kupperman and his associates. We, too, noted that within twenty-four or forty-eight hours there was marked relief in the pain from the lesions. Particularly the female patients who previously refused to allow examination were quite willing to be examined. Furthermore, the lesions which had previously been red and raw and angry in appearance became less intense, purplish in color and showed evidence of healing. In about a week, it was evident that the lesions were healing in a centripetal fashion. Although some of these patients had extensive granulomatous masses, at about the end of a week the masses began to shrink in size and the shrinkage continued even after treatment was discontinued. In several patients we contemplated removing these extensive granulomatous masses after treatment was completed. This was done on only 1 male patient for the purpose of examining the residual tissue more completely. We only did weekly smears and found that in every patient the Donovan bodies were present at the end of one week; in the second week specimens they were completely gone. The duration of treatment in our patients has ranged from eight to forty-seven days. We continued treatment until the ulcerative lesions were completely healed. The follow-up period has now been for periods up to ten weeks for some patients. We noticed that in patients who had moist ulcerative lesions that were in apposition or that were bathed by vaginal discharge the healing was somewhat slower. We had several complications in our

series. One patient was delivered of a viable infant at seven months, ten days after treatment was started. Another patient was six months pregnant when treatment was started and at the conclusion of treatment her pregnancy had apparently progressed uneventfully. Another patient had secondary syphilis which was treated with penicillin concurrently with apparently good results. Another interesting problem was that 1 of the patients with a granulomatous lesion of the groin had a remarkable response for the first ten days, but thereafter there was no further improvement. We went back and studied the original and follow-up slides and found that he also had a squamous cell carcinoma at the site of the venereal disease. We think that the effect of streptomycin in granuloma inguinale is remarkable.

DR. HARRY M. ROBINSON, Baltimore, Md.: It would be a great satisfaction to get a good result in some of those poor suffering Negroes who in the vast majority of instances have no money and no facilities for treatment and for whom hospitalization is practically impossible to obtain. I did not hear whether the investigators made any biopsies from the scars. In some of those patients whom we treated with other methods, in doing biopsies on scars we found cells including Donovan bodies. We were able to control granuloma inguinale to a certain extent with the antimony products when the condition was caught in the early stage, but when the treatment was stopped, later practically the entire condition recurred. In some of the patients on whom we worked with excision, while some of the scar following excision remained undisturbed, at the margin of the scar new granuloma inguinale tissue appeared. I certainly hope that this bears out the promise that it appears to have. I am not saying this in a questioning mood; it is just a marvelous possibility, and we hope to try it ourselves.

DR. R. B. GREENBLATT, Augusta, Ga.: Through the Public Health Service we were able to obtain supplies of streptomycin, and work on a series of cases was started in the early fall of last year. Of all the diseases which we see in the South, granuloma inguinale is one of the tragic illnesses. The wretched, poverty-stricken patients do poorly on ambulatory treatment with antimonials, and some cases have come to our attention in which foul, ulcerative wounds have been present for ten to twelve years. Dr. Kierland made mention of the Chicago group who last summer treated 3 cases. We are glad to hear about it and would like to concede priority to them. We did not know about their experimental work at the time that we made our contacts for work with streptomycin in granuloma inguinale. Dr. Pillsbury's remark that "we owe a debt to society in the treatment of patients with granuloma inguinale" is timely. We, too, feel that though these patients have to be hospitalized and though streptomycin is expensive we can at least offer them hope for rehabilitation and an opportunity to become decent members of society. Heretofore, I think the management of granuloma inguinale has been a blot on our public health escutcheon. The apathy shown by physicians in the care of these patients is regrettable. Dr. Hirsh, we are happy to learn, has been able to corroborate our findings on the use of streptomycin. We are pleased to hear that he has developed a medium in which streptomycin may be administered at daily intervals. In regard to Dr. Robinson's query on whether biopsies were obtained from scar tissue, I might say that in all patients in this series biopsies or smears were taken before therapy and for many weeks after therapy. In only 1 instance was a biopsy taken from a healed scar to see whether Donovan bodies were to be found deep in the tissues. In the sclerosing type of granuloma inguinale a presumably spontaneous healing takes place by scar tissue. However, the study of biopsy sections from these scars reveals the presence of Donovan bodies. After adequate streptomycin therapy Donovan bodies disappear rather rapidly, and though healing may take place comparatively slowly, the granulation tissue remains free from the Donovan body until healing is complete.

EFFECTS OF URETHANE IN THE TREATMENT OF LEUKEMIA AND METASTATIC MALIGNANT TUMORS

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The results in the treatment of chronic leukemia with urethane (ethyl carbamate), reported by Paterson, Haddow, ApThomas and Watkinson,¹ were sufficiently promising to stimulate further clinical investigation of this drug. We are presenting a report of our observations of the effect of urethane on leukemia and some of the malignant neoplastic diseases.

Urethane ($\text{H}_2\text{N.CO.O.C}_2\text{H}_5$) was first synthesized by Dumas² in 1834 from ethyl chloroformate and ammonia. White crystals are formed which are readily soluble in water and many of the commonly used organic solvents. It belongs to a group of organic esters of carbamic acid which are known collectively as urethanes because of their structural similarity to urea. The term "urethane" has been generally applied to ethyl carbamate itself. Carbamic acid is unstable and has not been isolated in the free state.

Although an extensive literature concerning urethane exists there are many gaps in our knowledge relative to its pharmacologic actions. Schmiedeberg³ studied its narcotic property in dogs and noted that with anesthetic and sublethal doses there was no significant effect on the pulse and respiration. Jolly⁴ was apparently the first to note the effectiveness of urethane as a hypnotic in clinical medicine. A number of other favorable publications appeared toward the end of the nineteenth century.⁵ The drug was popular for a brief period, but because of its weak and uncertain hypnotic action it was soon replaced by the more dependable barbiturates, then being introduced.

Haddow and Sexton⁶ have reviewed the experimental work leading up to the trial of urethane in the treatment of malignant growths and the incidental discovery that it was more effective in inducing remissions in human leukemia. Recent reports⁷ confirm the

effectiveness of the drug in mouse myelogenous and rat lymphatic leukemia. In this regard attention should be directed to the study of Hawkins and Murphy⁸ in 1925 on the effect of urethane in normal rabbits and rats. They found that urethane induced relative lymphocytopenia and granulocytosis, which they attributed to an accompanying uncompensated alkalosis. They obtained similar results by the injection of sodium bicarbonate or the administration of toxic doses of roentgen radiation. In addition they noted that rats under urethane anesthesia, given an exposure to roentgen rays well below the lethal dose, invariably died within seven to fourteen days.

Other effects reported with urethane include a decided antibacterial action,⁹ a significant antihistamine action which has been applied to the symptomatic treatment of bronchial asthma;¹⁰ hyperglycemia and glycosuria;¹¹ azotemia and increased urinary nitrogen excretion;¹² parasympatholytic effect;¹³ toxicity for rat liver,¹⁴ and carcinogenic action on mouse and rat lung¹⁵ and rat liver.^{16b} From its narcotic action it appears that the drug is rapidly absorbed from the gastrointestinal tract and rapidly eliminated from or altered in the body. That urethane is converted to urea and carbon dioxide in the body¹⁶ is no longer believed to be likely.¹⁷

METHOD OF ADMINISTRATION

Urethane was administered in several ways. Paterson and co-workers¹ prescribed the drug in a solution of chloroform water and syrup of orange. We have used 0.5 Gm. gelatin capsules and 0.5 Gm. enteric-coated capsules.¹⁸ Forty and 50 per cent solutions were used for intramuscular injection in some patients. Nausea was occasionally complained of soon after the nonenteric-coated capsules were ingested. We attribute this nausea to gastric irritation. Nausea with vomiting rarely developed after two or three weeks of oral therapy. This delayed nausea, which was prominent in case 15 during the third course of urethane, occurred after the dose had been doubled to 2 Gm. three times a day for ten days. Enteric-coated capsules were being given at this time. It is possible that this delayed nausea is a sign of overdosage. As much as 2 Gm. three times a day has been given intramuscularly without any complaint of local irritation. A hypnotic effect characterized by dizziness and drowsiness was fre-

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17. Goodman, L.: Personal communication to the authors.

18. These were supplied by Eli Lilly and Company.

quently noticed when urethane was given intramuscularly. A slight sedative effect was noticed by the patients taking 1 Gm. three times a day by mouth. We have not noticed any toxic effects other than nausea and occasional vomiting.

TREATMENT OF LEUKEMIA

The table is a summary of the essential clinical data obtained in the study of 25 patients with leukemia and lymphomatous diseases. It is noteworthy that the patients with acute and subacute leukemia died after

Summary of Essential Clinical Data in Twenty-Five Cases of Leukemia and Lymphomatous Diseases

Case No. and Patient	Sex	Age	Diagnosis	Acute and Subacute Leukemia			Tolerance of Urethane	Clinical Result
				Therapeutic Decrease in Leukocytes	Morphologic Changes of Blood	Decrease in Size of Spleen and Lymph Nodes		
1 L. J.	M	28	Acute lymphatic	30,800 to 750	10% reduction in lymphoblasts	Slight	1 Gm. t. i. d. oral capsules	Fair, slight nausea
2 A. S.	M	56	Acute lymphatic	7,300 to 550	Slight reduction in lymphoblasts	None	1 Gm. t. i. d. oral capsules	Fair, slight nausea
3 W. S.	M	57	Acute lymphatic	6,300 to 4,100; subsequently rose to 23,000	Slight reduction in lymphoblasts	Slight	1 Gm. t. i. d. oral capsules	Good
4 S. S.	M	64	Acute monocytic	8,700 to 2,600	No change	None	1 Gm. t. i. d. oral capsules	Good
5 C. T.	F	58	Acute myelogenous	71,000 to 6,400	Maturation noticed	Slight	1 to 2 Gm. t. i. d. oral capsules- roentgen therapy	Good
6 E. F.	M	37	Acute myelogenous	122,000 to 122,000	None	None	1 Gm. t. i. d. oral enteric-coated capsules and plain capsules	Good
7 G. R.	M	53	Subacute myelogenous	74,500 to 460	None	None	1 Gm. t. i. d. oral enteric-coated capsules; total dose only 12 Gm.	Good
8 B. S.	M	4	Subacute lymphatic	11,400 to 350	Almost complete reduction in lymphoblasts	Slight	0.25 Gm. daily to t. i. d., oral	Good
9 G. G.	F	44	Subacute lymphatic	157,200 to 16,000	None	None	1 Gm. t. i. d. oral capsules	Fair, nausea, loss of appetite
Chronic Lymphatic Leukemia								
10 W. G.	M	47	Chronic lymphatic	228,000 to 1,800	Blood and marrow smears now seem to be normal	Moderate	1 Gm. t. i. d. oral capsules; 90 r therapy	Good; slight nausea
11 M. V.	F	72	Chronic lymphatic	80,000 to 18,000	Decrease in lymphocytes	Slight	1 Gm. t. i. d. oral capsules	Poor; nausea
12 K. K.	M	60	Chronic lymphatic	20,000 to 80,000	None	Slight	1 to 2 Gm. t. i. d. oral capsules; 2 cc. 50% solution intramuscularly t. i. d.	Nausea; vomiting; dizzy after intramuscular therapy
13 S. S.	M	58	Chronic lymphatic	221,000 to 96,000	None	None	1 Gm. t. i. d. oral capsules	Fair
14 H. B.	M	53	Chronic lymphatic	76,000 to 20,000	None	None	1 Gm. t. i. d. oral capsules given for 84 days	Good
15 F. K.	M	57	Chronic lymphatic	188,000 to 55,000; 98,000	Slight reduction in lymphocytes	Moderate	1 Gm. t. i. d. plain oral capsules; then enteric-coated	Good
16 W. H.	M	51	Chronic lymphatic	120,000 to 90,400	Less smudge cells	Slight	1 Gm. t. i. d. plain oral capsules	Good
17 W. Q.	M	72	Leukosarcoma	22,000 to 15,100	Slight reduction in lymphocytes	Complete reduction in spleen and lymph nodes	2 cc. 50% solution intramuscularly; t. i. d.; later enteric-coated capsules	Good
18 J. W.	M	57	Chronic lymphatic	65,000 to 43,600	None	Very slight	1 Gm. plain capsules t. i. d. for 1 mo.	Good
Chronic Myelogenous Leukemia								
19 O. S.	M	57	Chronic myelogenous	310,000 to 3,400	Decrease in immature cells	Complete	1 to 2 Gm. t. i. d. plain and enteric-coated capsules; 2 to 4 cc. 50% solution intramuscularly	Good
20 P. H.	F	49	Chronic myelogenous	190,000 to 8,000	Decrease in immature cells	Complete	1 Gm. t. i. d. plain and enteric-coated capsules	Good
21 D. H.	M	68	Chronic myelogenous	125,000 to 8,200	Decrease in immature cells	Slight	1 Gm. t. i. d. plain capsules	Good
22 J. P.	M	57	Chronic myelogenous	57,000 to 20,000	Slight decrease in immature cells	No splenomegaly present	1 Gm. t. i. d. enteric-coated capsules	Good
Lymphomatous Diseases								
23 R. D.	M	39	Giant follicle lymphoma	13,600 to 7,600	None atypical lymphocytes	None	1 Gm. t. i. d. plain capsules	Slight nausea and anorexia
24 A. K.	F	39	Hodgkin's disease	13,600 to 8,950	None	None	1 Gm. t. i. d. plain capsules	Good
25 R. C.	M	28	Hodgkin's disease	6,000 to 1,000	None	None	1 Gm. t. i. d. plain capsules	Poor

a period of time comparable to that observed in patients treated by other therapeutic measures or without any treatment at all. Even though the number of leukocytes fell to severe leukopenic levels in most instances, the patients progressed along a more or less uninterrupted downhill course. In 2 of these patients, 7 and

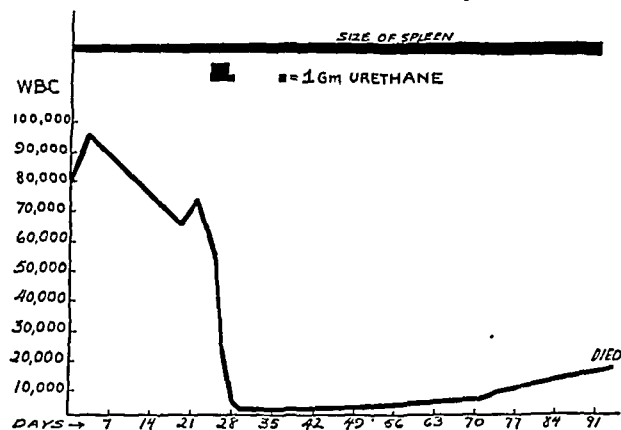


Fig. 1.—Clinical course in case 7 (subacute myelogenous leukemia and leukemia cutis).

9, a severe degree of leukemia cutis developed during and after the taking of urethane, even though their leukocyte counts were lower than before the institution of therapy (fig. 1). Patient 5 received a combination of urethane and roentgen therapy. Two courses of roentgen therapy (330 r and 440 r) were given with an interval of one month. Urethane was administered immediately after the second course of roentgen therapy, which, incidentally, had been applied to the mouth, the site of extensive leukemic infiltration. The leukocyte count eventually rose to 85,000 at the time of the patient's death, even though urethane was being received. Autopsies were performed in cases 1, 2 and 5. Extensive leukemic involvement of the marrow and other organs was found.

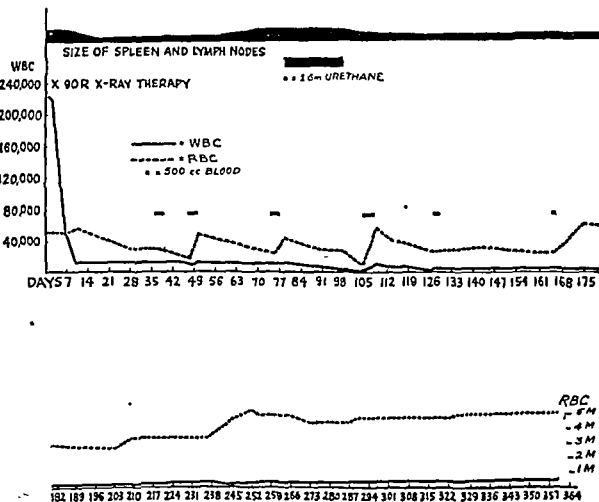


Fig. 2.—Clinical course in case 10 (chronic lymphatic leukemia).

Results have been more favorable in the chronic lymphatic group. Of the 8 patients treated, 3 have died.

One of these, patient 13, a Negro, had been ill for five months. He had extensive lymphadenopathy and splenomegaly when first seen. Hypertensive heart disease was also present. Urethane

was administered for thirty days. During this time his leukocyte count fell to a low level of 117,500. His spleen and lymph nodes decreased only slightly in size. He died suddenly on the forty-fourth day. At this time his leukocyte count was 96,000. An autopsy was not performed and the exact cause of his death was not ascertained.

Case 14 was considered to be a more acute form of chronic lymphatic leukemia. This patient was admitted to the hospital with hemiplegia on the right side which had developed suddenly two weeks previously. He had been in apparent good health until that time. The sternal marrow was heavily infiltrated with lymphoblasts and lymphocytes with numerous cytoplasmic vacuoles. He was given urethane for fifty-two days without any improvement. Death occurred fifty-eight days after urethane therapy had been instituted. This is the only case in the series in which neither clinical nor hematologic change was observed.

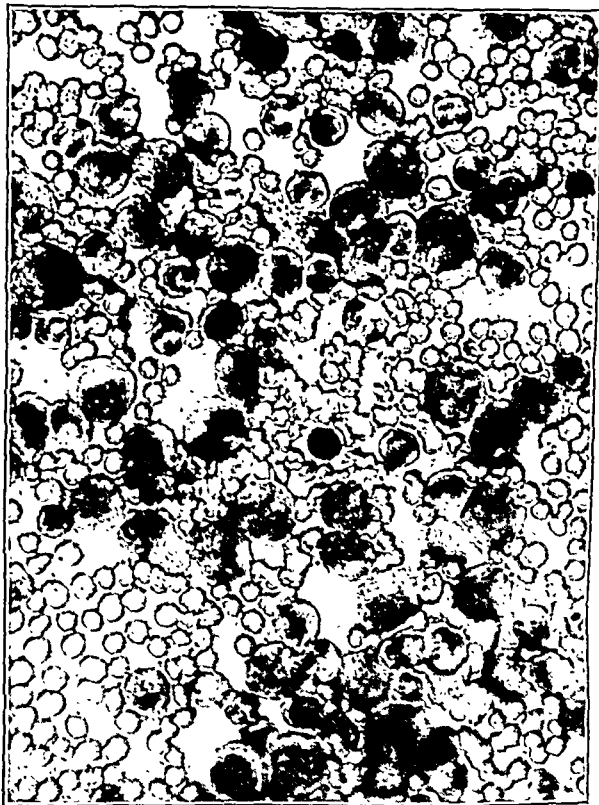


Fig. 3.—Sternal marrow before urethane therapy in case 19 (chronic myelogenous leukemia).

Patient 10 (fig. 2) initially received 90 r of roentgen therapy to his spleen in May, 1946. His leukocyte count fell from 228,000 to 12,000 with this small amount of therapy. There was only a slight decrease in the size of the lymph nodes and spleen, however, and he continued to become weak and more anemic. Six blood transfusions (500 cc. each) were given during the following nine weeks. His leukocyte count remained between 8,200 and 12,400, with from 73 to 69 per cent lymphocytes. He was given potassium arsenite solution for two days but could not tolerate the drug because of nausea and diarrhea. He was rehospitalized in July 1946, given three blood transfusions for his refractory anemia and started on a course of 3 Gm. of urethane a day. After eighteen days his leukocytes fell to 1,200 and his erythrocytes to 560,000. Administration of urethane was discontinued, multiple blood transfusions were given, and he gradually improved. After six weeks his sternal marrow smears showed a pronounced decrease in lymphocytic infiltration and an increase in erythropoiesis. The differential blood counts began to show a reduction in lymphocytes. Since Jan. 6, 1947 his erythrocyte and leukocyte counts have been essentially normal. It is impossible to diagnose leukemia from

an examination of his blood and bone marrow. Splenomegaly and inguinal and axillary lymphadenopathy have remained relatively unchanged. This patient has returned to work entirely free from symptoms.

In the remaining cases of chronic lymphatic leukemia there has been fairly good response to urethane therapy. Patient 11 stated that she felt better after a course of urethane than after roentgen therapy. Her spleen diminished in size. Patient 12 had also been previously treated with roentgen rays. Urethane alone, given orally and intramuscularly for forty days, failed to produce a remission. He was given 1,092 r along with urethane, and a remission was promptly induced. This patient died suddenly after what appeared to be an acute myocardial infarction three weeks later. Cases 15

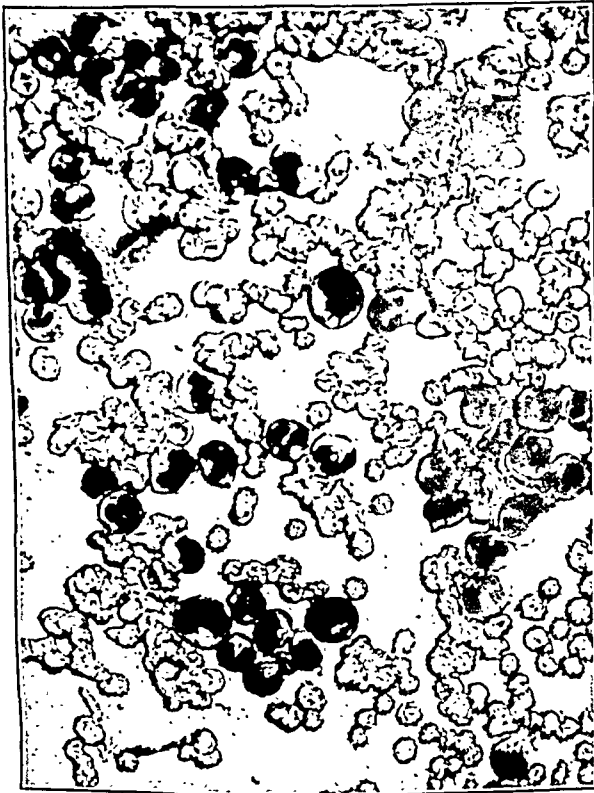


Fig. 4.—Sternal marrow after urethane therapy in case 19. Myeloblasts and premyelocytes have given way to more mature cells.

and 18 are early benign cases. These patients have experienced some hematologic and clinical improvement.

In each of the 4 cases of chronic myelogenous leukemia there has been good response to urethane. Splenomegaly was reduced and fatigability, diaphoresis and headache, when present, disappeared usually after a week of treatment. The leukocyte count approached normal and sternal marrow and blood smears revealed a noticeable change toward maturity (figs. 3 and 4). Patient 19 has had chronic myelogenous leukemia for two and one-half years. Three remissions have been induced (fig. 5). This patient prefers urethane therapy to roentgen therapy which he had previously received in 1945. In the remaining 3 cases there have been similar favorable responses. The fall in leukocyte count may be abrupt or gradual. This fall usually continues after administration of urethane is discontinued. Our

results in chronic leukemia are comparable to those of Paterson and her co-workers¹ and others.²⁰

Two patients with Hodgkin's disease have not been benefited by urethane. In case 19 leukopenia developed after six days of therapy. This patient was transferred to another hospital for more roentgen therapy. Patient

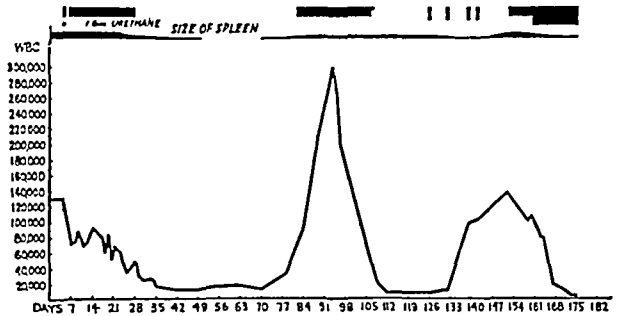


Fig. 5.—Clinical course in case 19.

18, whose disease is refractory to roentgen rays after intensive therapy, failed to show any improvement with thirty days of treatment. She was subsequently given a course of nitrogen mustard therapy and went into a relatively satisfactory remission. Case 21, giant follicle lymphoma, was not improved by twenty-one days of therapy, although a decrease in lymphocytes was noticed. This patient has recently received nitrogen mustard with a rather satisfactory result. In case 20, leukosarcoma with extensive lymphadenopathy, there was good response at first to intramuscular administration of urethane, 2 Gm. three times a day for fifteen days. Lymphadenopathy almost vanished and the symptoms disappeared. Three weeks later weakness and nausea returned. The patient was given urethane orally, 3 Gm. a day for fourteen days, and again felt much improved.

EFFECT ON MALIGNANT NEOPLASMS

Eight cases of malignant neoplasm were treated with urethane. These included: 4 cases of carcinoma of the stomach with metastasis and 1 case each of melanoma, carcinoma of the rectum, retroperitoneal myxo-

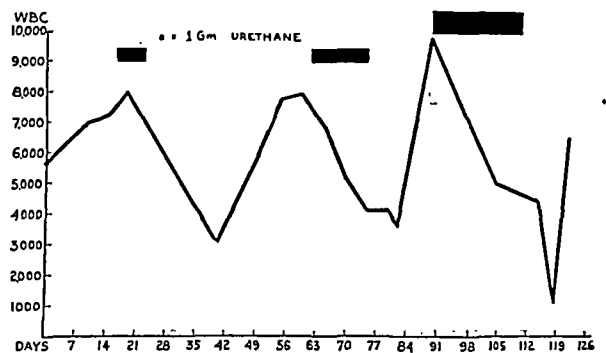


Fig. 6.—Leukocyte-depressing effect of urethane in a nonleukemic patient (with carcinoma of the stomach without clinical change).

sarcoma and lymphoepithelioma of the cervical lymph nodes. There was a twofold reason for using urethane in these neoplastic diseases: (1) to determine whether the disease process could be retarded and (2) to observe

20. Kartagener, M.: Urethan bei Leukämie, Schweiz. med. Wchnschr. 76: 821-822 (Sept. 7) 1946. Maringer, S.: Urethan-Behandlung der Leukämie, *ibid.* 77: 114-115, (Jan. 18) 1947.

the effect of the drug on nonleukemic leukocytes. It is impossible to reach any final conclusion regarding the inhibiting effect of urethane on the course of neoplastic diseases because the number of cases studied is small. All but 2 of the patients were in the terminal stage of the disease and were not ideal subjects for any type of cancer therapy. In the case of lymphoepithelioma the disease had been well controlled with roentgen therapy until recently. The patient enthusiastically stated that she felt much better after the first week of urethane therapy, but this may have been an effect of urethane sedation. It is our impression that in no instance was the course of the malignant disease altered. Others²¹ have reported favorable results. Leukopenia developed in 2 cases of carcinoma of the stomach. The leukocytes fell to 1,200 and 2,100. The leukopenia was produced three times in one of these cases (fig. 6). Larger doses of urethane caused a more depressing effect. The leukocyte counts rapidly returned to normal levels after discontinuance of the drug.

EFFECTS ON BLOOD AND BONE MARROW

We have studied the effects of urethane on the morphology of the blood and sternal marrow. Sternal marrow aspirations were performed on 6 patients. Little change in morphology of blood or marrow was noticed in acute leukemia. A diminution in the number of primitive cells and a slight tendency toward maturation were occasionally seen. This change appeared to be only temporary. In favorably responding chronic lymphatic leukemia, the absolute number of lymphocytes decreased and smudge cells were less frequently seen. In chronic myelogenous leukemia the blood and marrow showed a great decrease in immature cells. When these patients were in remission with leukocyte levels below 10,000 the blood smears appeared rather normal. Lymphocytes were, however, rarely seen in the smears. Erythropoiesis and thrombopoiesis were not inhibited by urethane in our cases. In 1 of the patients with metastatic carcinoma of the stomach (fig. 6), in whom leukopenia repeatedly developed when urethane was administered, a marrow change developed at these times similar to that seen in the depressed phase of agranulocytosis. The marrow contained a majority of normoblasts. Myelocytes and promyelocytes were infrequently seen and often contained cytoplasmic vacuoles. Similar vacuoles were seen in marrow myelocytes of chronic myelogenous leukemia after urethane therapy (figs. 3 and 4). In 6 nonleukemic patients lymphocytopenia developed while they were taking urethane. In 3 cases this occurred without a significant decrease in the total leukocyte count.

COMMENT

The place for urethane in the treatment of leukemia cannot be designated precisely at this time. The drug appears to be of little or no benefit in producing remissions or prolonging life in acute leukemia. Its action in chronic lymphatic leukemia is variable but, when effective, produces results comparable to roentgen therapy. It is most consistently successful in controlling the clinical and hematologic abnormalities in chronic myelogenous leukemia. The drug has the following advantages: ease of administration and regulation of dosage, a minimum of toxic side actions, a desirable sedative effect and low cost. Jaffe's warning should be kept in mind when prolonged use is contemplated.

He found an increased incidence of pulmonary adenomas and malignant hepatomas in rats receiving a prolonged administration of urethane and suggested that this might occur in human beings.^{16b} Apparently urethane, like roentgen rays, may at times be carcinogenic.

Urethane may be considered as an additional therapeutic agent available in the treatment of chronic leukemia. We are unable to conclude that it offers any advantage over roentgen therapy other than its ease of administration. We believe that its action is less precise. The drug is more easily administered than are the nitrogen mustards and radioactive phosphorus and, since it is perhaps equally effective in chronic leukemia, its use is to be preferred. Its effects are at times strikingly similar to those of potassium arsenite solution. It is possible that a program of combined therapy consisting of roentgen rays, urethane and nitrogen mustard may be found to be more effective than any one of these therapeutic agents. The nature of the carbamate radical is such that innumerable compounds can be synthesized with it as a component. It is possible that newer compounds which are more therapeutically effective will be found. The mode of action of the carbamates is obscure. Several theories have been suggested but these are based on insufficient experimental evidence. There are indications that the urethanes are nuclear poisons,²² but whether this is due to interference with purine metabolism,⁶ cellular dehydrogenases²³ or other enzyme systems has not been established.

SUMMARY

Urethane (ethyl carbamate) is a potent leukocyte depressant in both normal and leukemic hemopoietic tissues. Satisfactory remissions have been produced in 4 cases of chronic myelogenous leukemia by the oral administration of the drug in doses of 1 Gm. three times a day. Nine patients with chronic lymphatic leukemia have shown a variable response to the drug. Good remissions have occurred in 2 of the patients, some improvement was noticed by 4, and the remaining 3 have died. Severe leukopenia was produced in most of the 9 cases of acute and subacute leukemia without any substantial influence on the course of the disease. No clinical improvement was noticed in 8 cases of malignant neoplastic disease treated with urethane.

ABSTRACT OF DISCUSSION

DR. CLAUDE E. FORKNER, New York: Leukemia is a disease of unknown cause and without satisfactory treatment. I think we still can say that in spite of this excellent work with ethyl carbamate, or urethane, this new agent does not, in our present knowledge, add much to our ability to treat leukemia effectively. The studies are important, however, because through them new information may be gained which may provide an approach to the understanding of the mechanisms by which the disease may be influenced. The most fundamental facts about the production or destruction of white blood cells are not known. There has been no systematic study of the blood-forming organs with respect to what causes regeneration and destruction of the white blood cells or even of the red blood cells. Our information on these points is only fragmentary. Urethane offers a new tool to add to our armamentarium for the treatment of leukemia. Among the tools which we now have are irradiation by means of roentgen rays, radium, radio-phosphorus; the use of arsenic, particularly in the form of potassium arsenite, the use of benzene, which has more or less

22. Dustin, A. P.: Les poisons caryoclasiques, moynes d'analyse cytophysique, *Arch. d'anat. micro.* (spec. no.) 25: 37-48, 1929.

23. Cadoni, G., and Imperati, L.: Ricerche sulla variazione dei composti della serie dell'uretano sui processi di deidrogenazione, *Riv. di pat. sper.* 6: 65-71, 1930.

21. Footnote 1. Goodman, M. J., and Lewis, H. P.: Urethane in Leukemia, *Correspondence*, *J. A. M. A.* 132: 1105 (Dec. 28) 1946.

been discarded, and the use of nitrogen mustard. All these agents must be used with care. None of them ever cures the disease; all may be dangerous. It is of some importance that the agents which we use to treat leukemia are of themselves carcinogenic. This may be a reason why no known agent is thoroughly satisfactory, because in the treatment of leukemia, we may be simultaneously rendering that person more susceptible to the disorder. The results with urethane correspond somewhat to those achieved with other methods. All these methods are more effective in the treatment of chronic myelogenous leukemia. They are a little less effective in the treatment of chronic lymphogenous leukemia. None of them is effective in the treatment of acute leukemia. Spontaneous remissions do occur, particularly in acute leukemia. Some of the instances in which ethyl carbamate has seemed to be of value may be purely spontaneous remissions. It is too early to judge whether this agent is going to be as effective as other agents, but it seems from our own small experience and from the literature that perhaps it is not as effective as the agents which we now use in the treatment of the disease. The important point to be stressed here is that this new agent may offer an opportunity to learn something about the mechanism of what is going on in the leukemic patient and learn something about the mechanism of blood formation and blood destruction.

DR. LEON O. JACOBSON, Chicago: Working with the nitrogen mustards and more recently with urethane has given some opportunity to compare the therapeutic value of a number of agents. We have used urethane in the following ways: We have attempted to induce repeated remissions in myelogenous and lymphatic leukemia of the chronic variety, and in lymphomas, and particularly Hodgkin's disease. After remissions have been induced in the lymphomas and particularly Hodgkin's disease by roentgen ray or nitrogen mustard, an attempt has been made to maintain a long remission by giving urethane. We have also used urethane in metastatic carcinoma of the breast. In our limited experience, we have been able to produce and maintain brief remissions in chronic lymphatic and chronic lymphadenous leukemia, but feel in general that the remissions produced were shorter and less satisfactory from the hematologic and symptomatic point of view than those produced with roentgen therapy, with phosphorus 32, in selective cases, and with nitrogen mustards. In those cases of Hodgkin's disease in which a clinical remission had been produced with roentgen rays or with nitrogen mustards and then urethane was given, we were unable to prolong the remission. These patients had been treated repeatedly for various periods of time with roentgen rays or nitrogen mustard; thus we knew approximately how long remissions could be expected to last in individual cases. Urethane did not prolong the remission or even make it more complete. Cancer of the breast with generalized metastasis was not affected in our limited experience. Urethane seems to control myelogenous leukemia more effectively than lymphatic leukemia. As you know, radiation and nitrogen mustard produce more profound effects on lymphatic tissue than on myelogenous tissue. Further work may indicate that urethane will be useful as an adjunct to roentgen rays in various neoplasms. The results obtained thus far by various workers using urethane, nitrogen mustards and other chemotherapeutic substances have given a definite stimulation to work on the modification of these compounds and the search for other more effective chemotherapeutic agents. Even with these agents the treatment of these diseases is unsatisfactory at present. I would like to ask Dr. Hirschboeck to tell a little more of the toxicity which he encountered in his cases.

DR. EDWIN E. OSGOOD, Portland, Ore.: As a part of a long term study of the fundamental nature of growth at the University of Oregon Medical School along the lines that Dr. Forkner mentioned, Dr. Chu I-Tung and I have included a study in marrow cultures of the action of urethane. I should like to ask Dr. Hirschboeck whether he has noted changes in the granulocyte series similar to those that I will show. In the marrow culture, we have a method for controlled quantitative study of living human cells. We were able to compare the action of 200 kilovolt roentgen rays, radioactive phosphorus, neutron rays, million volt roentgen rays, colchicine, urethane and nitrogen mustards. I want to show the changes that

occurred in the cells in the urethane series which were not observed in the controls or with any of these other agents. The first thing noticed was an increase in the number of mitoses occurring as early as three hours and reaching a maximum at twenty-four hours. This doubtless accounts for the increase in cell count observed early by Dr. Hirschboeck. The most common change noted and seen chiefly in granulocytes and progranulocytes was that the basichromatin is aggregated in clumps with persistence of the nuclear membrane. A less frequently observed effect was complete loss of nuclear membrane with fragmentation and karyorrhexis rather than a colchicine-like effect. The number of fragments were too few for them to be altered chromosomes, and they were more rounded than with colchicine. Urethane does not affect all the cells. A common development after the third day was the appearance of double nuclei in cells of the granulocyte series, first in the progranulocyte and later in more mature cells. Such double nucleated cells are extremely rare in the granulocyte series, though common in cells that divide by amitotic division. Clinically, we have observed similar results to those reported by Dr. Hirschboeck but agree with Drs. Forkner and Jacobson. We feel that results from urethane are inferior to those with regularly spaced total body irradiation or injections of radioactive phosphorus. In the 1 case of malignant tumor reported in the correspondence section of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION by Goodman and Lewis we observed the most striking regression in a metastatic malignant tumor that I have ever seen with any method of therapy.

DR. WILLIAM DAMESHEK, Boston: I had the occasion yesterday in the Section on Experimental Medicine and Therapeutics to discuss two other chemotherapeutic methods, namely, the use of nitrogen mustard in Hodgkin's disease and the use of "stilbamidine" in multiple myeloma. It is possible that we may now be at the threshold of a chemotherapeutic era for the treatment of the proliferative disorders of the white blood cells. Urethane has a definite effect, particularly in chronic myelogenous leukemia. In relatively early cases an excellent remission may be obtained, and this can be continued for at least a few months by the use of the drug in relatively small dosage. In the severe cases with a large spleen, some effect on the white cell count may be obtained, but there may be little reduction in the size of the spleen. In these and other cases of advanced chronic myelogenous leukemia, roentgen therapy appears to be far more effective than urethane. What is more, when the drug is discontinued or its dosage diminished, there is usually a quick relapse, with a rapid rise in the leukocyte count to high levels. One great advantage of the various chemotherapeutic methods which are now in the process of development is that they allow complete control of therapy by the internist or hematologist rather than the divided control which is essential in roentgen therapy. The radiologist naturally likes to control his own particular apparatus, and we like to control our patient. Often some degree of conflict occurs, which will be avoided as chemotherapeutic methods continue in their development. It is the hope for the future that continued study in this field will lead to methods for the control of the abnormal metabolic activities of the proliferating white cells.

DR. JOHN S. HIRSCHBOECK, Milwaukee: In answer to Dr. Jacobson's question regarding toxicity, I may state that we believe that urethane may cause two types of nausea and vomiting. One is due to a local gastric irritation occurring in a few patients after the ingestion of as little as one or two doses of the drug. The other appears to be central in origin and occurs late in the course of therapy, even when enteric-coated capsules are used, and may persist for several days after the drug is discontinued. One of the patients with chronic lymphatic leukemia showed evidence of nephritis at autopsy. This may have been a toxic effect of urethane. We have not noticed morphologic change in the blood or marrow other than the cytoplasmic vacuoles which were described. Urethane therapy is, of course, still experimental. We feel that the drug is of definite value in chronic myelogenous leukemia and should be used to supplement or substitute for roentgen therapy. It is particularly suitable for patients who do not live near a roentgen therapy center.

Special Article**CANCER OF THE NERVOUS SYSTEM**

Brain, Spinal Cord and Peripheral Nerves

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and

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This article is the fifth of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment. When complete, the series will be published in book form by the W. B. Saunders Company under the sponsorship of the American Medical Association and the American Cancer Society.

Since the end of World War I impressive advances have been made in our knowledge of the biologic characteristics, modes of early diagnosis, and treatment of tumors affecting the nervous system. It is now recognized that these tumors, once considered rare, constitute 2 per cent of all cancers. The early diagnosis of this group has been materially aided by improvement in the knowledge of the physiology of the nervous system as well as by technical developments, notably pneumoencephalography, cerebral angiography, myelography and to some extent electroencephalography.

Through improvement of surgical and anesthetic technique the operative mortality in brain tumors is at a level comparable with that of major surgical operations elsewhere in the body. The percentage of surgically curable tumors is gradually being enlarged. Improvement in roentgen therapy is prolonging the useful life of increasing numbers of patients with nonremovable growths.

The side effects of brain tumors have also become controlled more satisfactorily during this period of time. Convulsions, which are one of the most frequent complications of brain tumors, are reduced in frequency or are eliminated entirely by a variety of anticonvulsant drugs which have been developed in recent years. Improved knowledge of endocrine function has minimized the distressing effects of tumors of the intracranial endocrine glands and centers. Developments in these two particular lines have reduced the incidence of psychic disturbance resulting from the projection of endocrine or convulsive disease into the patient's life.

INTRACRANIAL TUMORS

The term intracranial tumor has come to include all the intrinsic tumors of the brain, the pituitary and the pineal glands, the cranial nerves and the meninges as well as those tumors of the skull which come to invade the intracranial space. Daughter growths from cancer elsewhere in the body also are included.

Successful treatment of an intracranial tumor depends on its type, its accessibility, the extent of its involvement of important areas (speech, motor, medulla) and the stage at which it is diagnosed. More than 50 per cent of all brain tumors fall in the favorable group if there is reasonably early diagnosis and if the treatment is properly executed.

EARLY DIAGNOSIS OF TUMOR OF THE BRAIN

Tumor must be thought of whenever the symptoms and signs are those of a progressive single lesion. The onset usually is insidious but occasionally is precipitous as in glioblastoma multiforme. Certain generalities may give some support to the early suspicion that a neoplasm may be present. Thus, most tumors in adults occur above the tentorium; a notable exception is the cerebello-pontine angle tumor, or perineurial fibroblastoma of the eighth (auditory and vestibular) nerve. As with all other growths, brain tumors in adults have their highest incidence in the cancer age of the fourth, fifth and sixth decades. Most brain tumors of childhood are of the cerebellum, with the supratentorial exception of the epithelial cysts near the pituitary (Rathke's pouch cysts, craniopharyngioma). These general trends, however, are valuable only as positive support for an impression of tumor and not in a negative way to rule out other etiologic factors.

Brain tumor may manifest itself in three ways: first, by local irritation of some structure of the central nervous system which produces a convulsion or some other evidence of uncontrolled nervous discharge; second, by focal paralysis of some part of the brain, or of one or more cranial nerves, which diminishes or eliminates thereby the function of the part affected; third, by an increase of intracranial pressure because of the size and space-occupying nature of the tumor, or because its presence blocks the pathways of cerebrospinal fluid between the ventricles and the site of absorption. Signs of local irritation or of local pressure usually are earlier signs than are those of general pressure, though some tumors by their location may block the fluid pathways at a relatively early date.

Convulsions which start in adult life constitute one of the more frequent early signs of tumor affecting the cerebrum. The neurologic axiom has developed that the initial appearance of convulsions in an adult must be regarded as evidence of a brain tumor until proved otherwise. Both intrinsic and extrinsic tumors may irritate the cortex, thus producing such a discharge. In the so-called silent areas of the brain the tumor may reach considerable size before manifesting itself in this way, but in the more responsive regions tiny growths may thus give evidence of their presence. If the motor cortex is affected a jacksonian type of fit may be anticipated. If the somatosensory cortex is involved a sensory pattern of numbness, tingling, electricity or pins and needles in the affected part may predominate in the early phases. If the inner aspect of the tip of the temporal lobe is involved olfactory or gustatory hallucinations may be observed. Tumors around the sella turcica may produce these phenomena. If the upper posterior part of the temporal lobe is affected there may be auditory hallucinations. Visual hallucinations come from irritation in the occipital region. The appearance in an adult of hallucinatory phenomena, recurrent and of a fairly regular pattern, should make one think of an early brain tumor. If the lesion involves the dominant hemisphere, transitory difficulty in speech may be an early manifestation of brain tumor and should be regarded as an irritative phenomenon, probably originating in the depths of the hemisphere.

Focal paralysis of function may appear after an initial period of irritation or may occur as an initial symptom. Weakness of an extremity progressing both as to degree and as to extent of involvement may occur if a tumor is developing in the motor cortex. The progress of a

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weakness from one extremity to its fellow on the same side, such as from the right leg to the right arm, should be particularly suggestive. Reflexes are usually increased and pathologic reflexes may be present. Involvement of the postcentral cortex may result in progressive loss on the opposite side of stereognosis, recognition of figure writing on the skin and identification of texture, form and weight (deep sensation). Defects in the visual fields may result from a lesion involving the optic tract anywhere between the occipital lobe and the optic foramen; a lesion posterior to the optic chiasm would produce a defect homonymous in character; one anterior to the chiasm would probably affect one eye alone. Focal lesions below the tentorium may paralyze single or successive groups of cranial nerves. Involvement of the cerebellar tracts or nuclei will produce impaired coordination.

Alteration in temperament may be an early manifestation of a brain tumor, particularly of the intrinsic type (glioma). This seldom persists for any long period of time as an isolated complaint. Most temperamental changes are associated with either frontal or temporal lobar lesions. Some personality change may appear in conjunction with generalized increase in intracranial pressure. Overt psychopathic states are not common.

The usual symptoms of increased intracranial pressure are of generalized headache, drowsiness, nausea, vomiting and slowness of the pulse. Ocular papilledema (choked disks) almost always occurs. In the child a cracked-pot note may be elicited on tapping the skull. If the pressure is the result of a tumor in the region of the third ventricle there may be associated metabolic changes such as increase in weight, altered sexual activity and changes in water metabolism. A block at the aqueduct of Sylvius may add interference with conjugate movement of the eyes in an upward direction. A block in the region of the fourth ventricle may produce ataxia, nystagmus and weakness or paralysis of cranial nerves.

Once a growth is suspected special studies may be necessary to positively identify the tumor. Plain roentgen ray films of the skull may show localized erosion, proliferation of bone or unusual vascular markings. Tumors of or near the pituitary may enlarge or deform the sella turcica. Decalcification of the dorsum sellae is characteristic of generalized intracranial pressure. Tumors arising from the eighth nerve sometimes enlarge the internal auditory canal. Deposition of radiopaque material such as calcium may appear in almost any type of neoplasm; occasionally it is seen in certain of the cysts, such as Rathke's pouch cyst; it may also occasionally be seen in the walls of aneurysms. Probably the most valuable lateralizing sign of tumor to be obtained from roentgenograms of the skull is that of shift of a calcified pineal gland away from the side of a tumor. Occasionally in lateral films its displacement in the anterior-posterior direction may be demonstrated. Deposits of calcium in the choroid plexus must not be mistaken for a displaced pineal gland.

Roentgen studies following replacement of the ventricular and subarachnoid fluid with air or oxygen may give further valuable information. If the pressure of the spinal fluid is normal, this procedure can be performed by the lumbar route (pneumoencephalography); if the pressure is elevated, bur openings are made in the skull and the air is introduced directly into the ventricular system (ventriculography). By this method it is often possible to localize the tumor accurately, and at times its possible nature may be suggested. This procedure

should be carried out only when equipment and personnel will permit it to be followed immediately by operative treatment should this be found necessary.

The recent development of carotid arteriography, wherein radiopaque material is injected into the carotid arteries while roentgenograms are taken in rapid series, has opened up still further fields of study. Arteriograms are particularly adapted to early demonstration of tumor and may occasionally be of some value in the identification of the type of tumor.

GLIOMAS

Gliomas, which are the intrinsic tumors of the brain, constitute approximately 50 per cent of all intracranial tumors. These growths are composed of neuroectodermal cells, most of which are glial in character, though tumors containing neuronal elements are included. In a general way the cells of tumors of this group are similar to glial cells in various stages of embryonic growth and development, and the nomenclature now generally accepted, based in large part on that developed by Bailey and Cushing in 1926, reflects this apparent relationship between embryonic and neoplastic cells.

All gliomas, being invasive growths which tend to recur locally, must be regarded as malignant tumors. Recurrence can be eliminated or significantly delayed only through early recognition and treatment before essential areas have become invaded by the neoplastic process. When the tumor arises in such a region, the problem, of course, is resolved as it commences.

Astrocytoma.—The astrocytomas, which constitute somewhat more than one fourth of the gliomas of the brain, are the commonest of the gliomas. About 65 per cent of the astrocytomas are cerebral, approximately 18 per cent arise in the cerebellum and approximately 10 per cent occur in the brain stem and the region of the third ventricle. The sex incidence of astrocytoma is about evenly divided. The age incidence in the cerebrum and in the cerebellar hemispheres is greatest in the fourth and fifth decades. In the cerebellar vermis the incidence is highest in the first and second decades. The period of symptomatologic manifestations and the survival depend not only on the type of tumor growth but on the location.

There are three subtypes of astrocytoma. Fibrous (piloid) astrocytomas are composed of cells rich in fibers, with small nuclei scattered throughout the neoplastic mass. These tumors are found in the cerebrum and in the cerebellum. The cerebral groups are firm, pale and gelatinous and may contain small cysts or occasionally a large one. By involvement of whole gyri and by their firmness they may give a false appearance of being well demarcated. In the cerebellum large cysts containing yellow fluid which clots on removal are frequently encountered. In these the active tumor usually is found as a nodule in some portion of the cyst wall (mural nodule), removal of which is often completely curative. Of all the gliomas this tumor carries the best prognosis. Survivals of over three years following extirpation of cerebral astrocytomas are not at all uncommon.

Protoplasmic astrocytoma (diffuse) is more commonly seen in the cerebrum. The cells infiltrate the white and gray matter, stimulating satellitosis about nerve cells and stifling their activity by force of numbers of invading cells. These diffuse tumors may cause irritation and produce convulsions, but they progress so insidiously that a mass may not be evident until late in the disease. At operation a generalized widening of

gyri and narrowing of sulci may be seen, but the limits of the tumor may be poorly defined. The tumor type can be identified by biopsy. Fortunately this tumor is fairly responsive to roentgen therapy.

Gemistocytic astrocytoma, composed predominantly of Nissl's plump cells, is the third variant of the astrocytoma group. This tumor also is more commonly found in the cerebrum. It is the most rapidly growing of the astrocytomas, has the shortest history and is the most unfavorable of the group. Its preoperative history is usually but slightly longer than that for glioblastoma multiforme; postoperative survival, however, is significantly longer. Grossly these tumors are usually reddish and gelatinous or meaty in appearance. Cysts are uncommon and when present are usually small, probably representing areas of degeneration. The invasive proclivity of the tumor is midway between that of the protoplasmic astrocytoma and the suggestive encapsulation of the fibrous astrocytoma. The tumor is not as solid as the noncystic fibrous astrocytoma. Areas of degeneration may cause it to be mistaken for glioblastoma multiforme, grossly as well as microscopically. Postoperative survival of from one to two years is not uncommon. As with other tumors predominantly cerebral in location, the problem of convulsions may be a major one.

Glioblastoma Multiforme.—The second most common of the gliomas, constituting about one fourth of this group, is glioblastoma multiforme (spongioblastoma multiforme). It occurs far more frequently in the cerebrum than elsewhere, although it has been described in the brain stem and the cerebellum as well as in the spinal cord. It affects males more frequently than females in a proportion of about three to two. The age incidence is greatest in the fourth, fifth and sixth decades; however, instances have been described in the very young and the very old. Glioblastoma multiforme may come on with precipitous suddenness, striking a man in the prime of life completely without warning. The sudden onset may be so striking as to cause confusion and an erroneous diagnosis of a vascular accident. The progress of the disease, however, will usually give early evidence that the problem is no ordinary hemorrhage or thrombosis. The average total duration of symptoms is between six months and a year. However, patients who have been treated early and radically have survived as long as five years after the first diagnosis. About one third may be expected to live longer than one year if removal is accomplished early and is combined with roentgen therapy.

Glioblastoma multiforme appears to originate most commonly in the white matter of the brain and tends to travel by the tracts of the brain, crossing to the contralateral side by the corpus callosum and going into the brain stem by way of the major pathways to and from the cerebrum. It invades the gray matter indiscriminately, however. The tumor is usually soft and succulent, containing large areas of degeneration. Cysts of varying size, which contain reddish yellow fluid, may be encountered. These may develop in a relatively short period of time. Large vascular channels, some of whose walls apparently take part in the neoplastic process, course through these growths. Occasionally firm tissue of mesoblastic origin may be found at the surface. The tumor may have the appearance of being encapsulated, but deeper it will be found in continuity with the underlying white matter. Variations in color and occasional small collections of frank clots

suggest that extravasations of blood may occur in these tumors with some degree of frequency.

Microscopic study reveals cells of varying size and type. There is no recognized cell which is named the glioblast. The cells of the tumor include almost every variant of the glial series. The blood vessels show striking proliferation of the adventitia and intima, suggesting that the vascular system plays a role in this neoplastic process greater than that usually found in other tumors of the glioma series. Frank obliteration of vascular channels with recanalization and vascular budding also is observed.

If glioblastoma multiforme is encountered early and in an area from which it can be extensively removed, many months of useful and pleasurable life may be anticipated for the properly handled patient. Those tumors originating in more vital centers are, of course, difficult to handle and carry a proportionately increasing gravity of outlook with the importance of the center affected.

Medulloblastoma.—Medulloblastoma is the commonest glioma of childhood. It constitutes about 14 per cent of all the gliomas. This tumor practically always arises in the cerebellum and involves the fourth ventricle at an early stage. Males are affected more than females in the proportion of two to one. The average age is in the latter half of the first decade, but the tumor is fairly commonly seen throughout the first decade and into the first half of the second. Because this tumor occurs so frequently during a period when a certain degree of clumsiness is anticipated, the early signs of incoordination are not apparent or are ignored until signs of generalized pressure appear. A story of recurrent bouts of headache, nausea and vomiting culminating in recognition of impaired coordination or reduced vision due to extensive papilledema is all too common. Children with recurrent attacks of nausea, vomiting and headaches should be observed for changes in coordination, for changes in the note on tapping the skull and for evidences of papilledema.

Medulloblastoma is usually a soft, friable, cyanotic mass with little supporting connective tissue, and when presenting into the ventricle is covered at the surface by a filmy membrane no thicker than the arachnoid. Its friability permits cells to float out into the subarachnoid space, setting up daughter growths in the spaces of the cranium and of the spinal canal. The appearance of encapsulation is a false one, for the tumor is quite invasive. Because of its location and proximity to the brain stem it can never be regarded as having been completely removed surgically. Fortunately, it is responsive to roentgen therapy, which should always be used in addition to surgical procedures. Survivals of from one to five years are not at all uncommon in medulloblastoma when roentgen therapy is judiciously used in conjunction with treatment by surgical means.

Cerebellar Sarcoma.—A tumor in the cerebellum of older persons, having cells morphologically similar to those seen in medulloblastoma of childhood but associated with more extensive reticulin formation, the cerebellar sarcoma has been the subject of considerable discussion among neuropathologists. Some regard this tumor as essentially the same as the medulloblastoma of childhood. Others have regarded it as a cerebellar sarcoma differing from cerebellar medulloblastoma in all characteristics except its usual anatomic location.

Ependymoma.—Ependymoma constitutes about 10 per cent of the gliomas. This tumor is widely distributed

through the cerebrum, brain stem and the spinal canal, being the most frequently observed glioma of the spinal canal. It is reported more frequently in females than in males in a proportion of about two to one. The age incidence of the tumor in the brain reaches a peak in the third and fourth decades. In the cerebellum and brain stem it has a tendency to rise from the floor of the fourth ventricle and has been described in this location in the first few years of life. It is a fairly common glioma of childhood in the cerebrum.

Cerebral ependymomas frequently have connection with the ventricular system; a large percentage of the gliomas going into the lateral ventricles are ependymomatous in character. They are usually moderately firm, but cysts may be encountered. They grow slowly, the symptoms persisting for up to three or four years before their nature is manifest. Ependymomas of the posterior fossa usually block the fourth ventricle early in their course, giving rise to generalized increased pressure as an early sign. The postoperative survival in ependymomas depends on the location. Survivals up to five years are not uncommon. The tumor is fairly resistant to the therapeutic effect of the roentgen ray.

Polar Spongioblastoma.—Polar spongioblastoma (spongioblastoma polare) is most commonly seen in the region of the pons, the optic chiasm and the corpus callosum. The course of the disease is usually slow and insidious. The symptomatology is that of progressive involvement of the area of origin; that is, progressive loss of vision in tumors of the chiasm, progressive involvement of successive cranial nerves at their nuclei of origin if the pons is affected. The tumor cells insinuate themselves into the tracts or nuclei, finally stifling function by their overgrowth. Generalized pressure occurs late with tumors in the chiasm and is almost unheard of with those in the pons. These tumors in the corpus callosum are characterized by the mental disturbance so commonly seen in primary lesions of the corpus callosum. Disorientation, fabrication and delusion are frequent manifestations of such lesions.

Polar spongioblastoma constitutes about 5 per cent of the gliomas. It is slightly more common in the male than in the female. The age incidence of the tumor in the pons and in the chiasm is through the latter part of the first and into the second decade. Polar spongioblastoma of the cerebrum elsewhere, and particularly of the corpus callosum, is a tumor of adult life with a peak in the fourth and fifth decades.

This tumor is usually not amenable to surgical intervention because of the regions which it commonly involves. It is moderately susceptible to roentgen therapy, particularly in the basilar region. Patients have been carried along successfully for several years by the judicious therapeutic use of roentgen rays.

Oligodendroglioma.—About 5 per cent of the gliomas are oligodendrogliomas. The tumor may be indolent, and symptoms, in which convulsions predominate, may continue over several years before the identity of this slowly developing growth becomes manifest. Nearly all oligodendrogliomas are found in the cerebrum. They appear to commence in the white matter and slowly invade the adjacent gray. The age incidence is greatest in the fourth and fifth decades. The tumor appears to affect male and female about equally. Because of its slowness of growth, calcification is commonly found in the tumor. The tissue is usually moderately firm, but its area of extent is poorly outlined. Cysts are rare.

Periods of survival up to several years following surgical intervention are frequently seen. This is

regarded as being related to the slowness of growth inherent in this tumor rather than to the successful extirpation of the entire lesion. Sudden changes in the rate of growth are particularly common in this tumor, and changes in cell types may be found at subsequent examinations. The tumor is but moderately responsive to the effect of the roentgen ray.

MENINGIOMAS

Tumors of the meninges constitute approximately 16 per cent of brain tumors. They are most frequently encountered above the tentorium and therefore affect the cerebrum more frequently than the cerebellum and brain stem. They are found in females more frequently than in males in the proportion of about three to two. The age incidence is highest in the fifth decade, one third of Cushing's series, for example, being first observed in this period. Instances have been reported, however, from the first to the ninth decades of life. Interestingly, the average age of symptomatic onset is apparently about eight years younger than that for initial study, and patients are reported to have had convulsions for thirty years before treatment of a causative meningioma. Most of these tumors, however, will not permit such a lag between onset and treatment. The average rate of progress is fairly rapid, being a matter of only months in some cases.

Because of the location of the majority of meningiomas in relation to the cerebrum, convulsions are a major initial symptom. Sometimes the tumor will invade the skull, producing a bump on its outer surface which indicates its presence; sometimes progressive paralysis will occur without preceding irritative phenomena. Meningiomas at the base may block the cerebrospinal fluid pathways and produce generalized pressure as an initial symptom.

Meningiomas usually arise from the arachnoid, though there is generally an attachment to the dura and some primary tumors of the dura have been described. The tumor may grow primarily into the cranial cavity and may not produce demonstrable change in the adjacent bone. It may produce a thickening of the inner table of the adjacent skull; cells may invade the haversian canals to produce thickening of the inner and outer tables; invasion of the skull may reach the point at which there will be an erosion with considerable projection of tumor into the subgaleal space on the outer surface of the skull. The growth of most meningiomas is associated with a striking increase in vascular supply, and at times this will be manifest in plain roentgen ray films of the skull.

It is generally considered that there may be some relationship between these tumors and the arachnoidal granulations. The usual location of these tumors, which is most frequently close to one of the major dural sinuses, has some bearing on this possibility. Tumors of the olfactory groove and the tuberculum sellae are not uncommon.

Usually these tumors push the brain ahead of them and do not invade it. There may be pressure erosion of the pia, however, and extremely nodular tumors may come to incorporate isolated bits of brain in the crevices between the projecting nodules, producing, from a practical standpoint, invasion of the cerebrum itself.

The prognosis in meningioma is in general better than that for tumors of the glioma group. The vascularity plus the tendency to invade the skull, which are so frequently associated with meningiomas, make them a complicated one.

operation. Tumors attached to the sagittal sinus or the torcular, or plaque tumors overlying these essential structures, may recur, but the tumor type seldom changes and reoperation is to be regarded as justifiable when necessary. Meningiomas have been regarded as resistant to roentgen therapy, though favorable results are beginning to appear in the recent literature. The major complicating factor in meningioma is the convulsive state which may result from irreversible changes in the adjacent brain. These are controlled by the usual anticonvulsive regimen.

CEREBELLO-PONTINE ANGLE TUMOR

Cerebello-pontine angle tumor (eighth nerve tumor; neurinoma of the eighth nerve; perineurial fibroblastoma of the eighth nerve; acoustic neuroma) is said to constitute about 10 per cent of intracranial neoplasms. This tumor usually arises from the perineurium of the acoustic nerve just at or in the porus acousticus. It affects females more than males in the proportion of three to two and is most commonly found in the fourth and fifth decades of life. These growths may be bilateral, and their occasional association with von Recklinghausen's disease (neurofibromatosis) has been reported. The usual early symptoms are progressive loss of hearing in one ear, sometimes with tinnitus and occasionally but not commonly with some dizziness. Attacks of dizziness, such as those seen in Ménière's syndrome, are rare. Because of the proximity of the facial nerve in the porus acousticus, some involvement by pressure, manifesting itself as weakness of movement of the face, may be seen, usually as a late manifestation of the disease. As the tumor enlarges it may press on the ninth, tenth and eleventh nerves as well as the fifth and the third anteriorly. It may grow in front of the pons and may so distort the brain stem as to produce some signs of involvement of the opposite side, even when bilateral tumors are not present. It may press on the tract and the nuclei of the cerebellum to produce signs of cerebellar disease, again as a late manifestation of the tumor.

The tumor is usually encapsulated. Inside the capsule there may be areas of cystic degeneration, occasionally of gratifying size. Much of the tumor ordinarily is yellow and soft, but the presence of firm, fibrous trabeculae with ample blood vessels is common and makes removal difficult. It usually has a network of blood vessels over its capsule, and there may be intimate adhesions between it and the brain stem, the medulla and pons. The seventh nerve is commonly bound up in the wall of the tumor so that complete extirpation, at least in the late stages, is usually associated with paralysis of the seventh nerve.

When located early, these tumors can be completely removed and the patient cured with no incapacity other than the loss of hearing due to sacrifice of the affected eighth nerve. Unfortunately, they are seldom discovered before there has been involvement of other cranial nerves and of the brain stem to the extent that complete removal is difficult or impossible. In such circumstances the surgeon generally has resort to subtotal intracapsular removal. Since the tumor does not ordinarily change its cytologic characteristics, reoperation when the tumor recurs is justifiable and patients may be carried along for many years of happy and useful life. The tumor is but moderately responsive to roentgen therapy.

Nowhere in brain tumor surgery is the necessity of early diagnosis more striking than in the case of this

tumor. Most patients with it have had a history of progressive loss of hearing on one side for many years. If one waits for evidence of involvement of the cerebellum or of other cranial nerves, the tumor is already too large to be approached without great hazard and the chance of getting a complete extirpation is materially reduced. Erosion of the porus acousticus, when definite, is a good positive sign; but its absence is a poor negative one, for the site of origin of many tumors is such that involvement of the bone occurs late or not at all. Nerve type loss of hearing that is unilateral and progressive should be regarded as potentially due to a tumor of the eighth nerve until proved otherwise.

Tumors similar in pathologic characteristics to that arising from the eighth nerve have been found arising from other cranial nerves, notably the tenth. Under such circumstances the symptom complex is that of progressive involvement of the nerve affected, those adjacent and, of course, the brain stem and cerebellum.

PITUITARY TUMORS

The incidence of adenomas of the pituitary gland is reported in widely varying figures, presumably related to the particular interests of the investigator. Probably the incidence is about 5 per cent of all intracranial tumors. Primary tumors of the pituitary are most commonly adenomas of the anterior lobe. Of these, chromophobe adenomas are two and one-half to three and one-half times more common than the next most frequent type, the eosinophilic adenoma.

Chromophobe adenomas give evidence of their presence by progressive reduction of sexual activity and other endocrine function. Pressure on the optic chiasm producing impairment of vision, usually having some or all of the aspects of bitemporal hemianopsia, may be the first sign. Some tumors may burst laterally from the sella turcica, compressing the third, fourth, fifth or sixth cranial nerves or irritating the hippocampal gyrus, thus producing uncinate fits. The tumor may grow into the posterior fossa, producing pressure on the brain stem as a late manifestation.

Eosinophilic adenomas are responsible for the well known syndrome of acromegaly quite early in their development. They usually do not reach the size that is common with the chromophobe adenomas but may produce similar changes in the visual field.

Basophilic adenomas are not regarded as reaching such a size as to make them of surgical importance.

Usually the surgical treatment of pituitary adenoma (chromophobe and eosinophilic) is directed toward the preservation of vision, and it is most effective early when the defect is confined to the bitemporal fields. Delay seriously increases the probability of permanent visual impairment. In advanced stages the mere decompression of the nerve by removal of the tumor may alter the physiologic relationship and result in complete blindness. Delay to such a point, however, is indefensible, since the clinical history plus roentgenograms of the skull showing enlargement of the sella turcica are seldom atypical. In the rare instance in which sellar enlargement is not demonstrable, progressive visual loss demands the use of encephalography for study of the parasellar region.

Pituitary adenomas are sometimes cystic. It may be feasible to remove an early growth completely, sometimes preserving a considerable amount of normal pituitary gland. The tumor cells are moderately sensitive to roentgen radiation. The initial swelling which follows roentgen radiation may cause increasing loss of

vision, however, and it is usually considered advisable to decompress the optic nerve surgically first. Another reason for advising surgical decompression first is that other tumors insensitive to roentgen radiation may mimic the effect of pituitary adenoma.

TUMORS OF THE HYPOPHYSIAL DUCT

Tumors arising from cell rests brought into the region of the sella turcica by the forerunner of the anterior lobe may give rise to epithelial tumors in or above the sella turcica (Rathke's pouch cyst; craniopharyngioma; pituitary adamantinoma). Slowly growing and usually cystic, they give evidence of their presence by pressure on the pituitary gland. They produce delayed sexual development or alteration of sexual function if puberty has already been reached. They may press on the structures in the region of the third ventricle, producing metabolic changes, dwarfism and obesity; by pressure on the optic nerve they impair vision. Unlike the pituitary adenomas, these tumors are usually seen in the first, second and third decades of life. Roentgenograms of the skull will commonly show changes in the sella turcica. There may be calcification in the walls of the cyst permitting it to be identified on this basis alone. These cystic tumors are not susceptible to roentgen therapy, but surgical extirpation, while often incomplete because of attachment of the tumor to vital centers, may be expected to give dramatic symptomatic relief, particularly with respect to vision. Early diagnosis and close medical supervision usually permit a favorable outlook for many years. Failure of sexual maturation presents a more difficult problem of therapy; by the time the diagnosis is made irreversible changes often have occurred.

EPIDERMOID AND DERMOID CYSTS (CHOLESTEATOMA; PEARLY TUMOR)

Wherever in embryonic life there has been infolding of the ectoderm, the inclusion of epithelial cells which maintain their more primitive characteristics of epithelium is possible, and the proliferation of these cells produces cystic tumors. If only the ectoderm is involved the resulting cyst is an epidermoid; dermoid cysts contain ectodermal and mesodermal elements. The rare teratoma will contain elements of all three germ layers.

In the cranium epidermoid and dermoid cysts are found in the third ventricle, in the posterior fossa and in the skull itself at points where there is infolding, as at the lateral margin of the orbit. The tumors give evidence of their presence by pressure on adjacent structures. In the third ventricle increased intracranial pressure is a common early sign. The tumors appear in the first three decades of life most commonly, though their slow growth may delay evidence of their presence until as late as the seventh decade. These cysts are encapsulated and when not intimately adherent to adjacent vital structures may be completely removed. If not totally removable, excavation of the content of the cyst may ameliorate symptoms for prolonged periods of time.

VASCULAR TUMORS

Angiomas.—Angiomas may affect the brain at any age and may manifest themselves at any age level, but generally evidence is present in the first three or four decades of life. Angiomas are generally regarded as congenital malformations of blood vessels, which enlarge by expansion of the vessels already present rather than by direct proliferation of cells. Three types of tumors are recognized; namely, telangiectases, and

venous and arteriovenous angiomas. They usually manifest themselves by the production of convulsions, probably due to scarring which results from the enlargement of the vessels and occasional small hemorrhages. Calcium is often laid down in the wall of these vessels, and the tumor then may be identified by plain x-ray films. The arteriovenous angiomas may have an accompanying bruit, giving a clue to the nature of the disease. Port-wine nevus in the distribution of the fifth cranial nerve may be associated with hemangioma of the brain. A patient with a port-wine nevus of the face who has convulsions must be considered as probably having an angioma of the brain.

Telangiectatic hemangiomas occasionally are removable lesions. The bulk of angiomas are cavernous in nature, however, and are not amenable to surgical or roentgen therapy. Unequivocal localization and diagnosis of this group are often possible through the arteriogram. Since these tumors do not grow, the chief problem is that of control of the convulsions which so frequently are the only cause for complaint.

Hemangioblastoma.—The hemangioblastoma, a tumor of proliferating embryonic blood vessels, may occur in middle life. It usually is found in the posterior fossa, giving evidence there of a slowly progressive, expanding lesion. This tumor is often cystic, the neoplastic part being preserved as a mural nodule. It is susceptible to roentgen therapy to a moderate degree. There may be an associated angioma of the retina and cystic degeneration of the parenchymatous organs of the abdomen (Lindau's disease).

INTRACRANIAL GRANULOMA

Granulomas in the brain may produce symptoms indistinguishable from those of neoplastic growths. Tuberculosis is the one most commonly encountered nowadays. It may be calcified and in certain regions may be successfully excised. Though occasional gummas are still to be seen, meningovascular syphilis is a more frequent mimic of an intracranial tumor. The diagnosis is made by serologic studies, and treatment is antisyphilitic.

Since the Leyte campaign, several instances of granuloma from schistosomiasis japonica have been reported, the granuloma behaving in all clinical respects like an expanding neoplasm of the cerebrum. Excision coupled with appropriate systemic treatment has generally been satisfactory in control of the disease.

METASTATIC TUMORS

Malignant disease elsewhere in the body may metastasize to the brain. Sometimes the intracranial metastasis will be the first evidence of the mother tumor. Cancers in the thoracic cage, of retroperitoneal origin, and of the breast, and malignant melanoma are common sources of intracranial metastases. Cancers in the throat and neck may invade the cranium by direct extension and erosion.

When circumstances indicate a single cerebral metastasis and the mother tumor apparently is under control, extirpation of the cerebral metastasis may be justified. Metastatic tumors in the brain are usually surrounded by an area of necrotic cerebral tissue and often may be completely eradicated. They ordinarily produce little general reaction on the part of the brain, and the patient may recuperate with surprising rapidity. The uncomplicated survival for many months following extirpation of a single cerebral metastasis is most gratifying for all concerned.

Clinical Notes, Suggestions and
New Instruments

CONGENITAL TOXOPLASMOSIS

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Toxoplasmosis has been clearly recognized as a disease of human beings only in recent years, but the disease is apparently much more prevalent than has been appreciated. Various clinical and pathologic types, congenital, infantile, adult typhus-like, chronic and asymptomatic, have been described. Since excellent reviews of this rather complicated subject have been provided by Wolf, Cowen and Paige,¹ Sabin,² Weinman,³ Pratt-Thomas and Cannon,⁴ Zuelzer⁵ and, recently, Callahan, Russell and Smith,⁶ another summary of the literature would be superfluous.

Summary of Results of Histologic Examination

Organ	Number of Blocks	Number of Slides	Slides Positive for Toxoplasma	Inflammatory Reaction
1. Cerebrum.....	5	5	2	++++
2. Brain stem.....	5	11	6	++++
3. Spinal cord.....	4	9	9	+
4. Eye, including optic nerve	2	35	3	++++
5. Nerve, 5th cranial.....	1	5	5	++++
6. Nerve, femoral.....	2	2	1	++
7. Lungs.....	7	7	0	+
8. Heart.....	4	16	0	+
9. Liver.....	4	4	0	0
10. Spleen.....	4	4	0	0
11. Pancreas.....	1	1	0	0
12. Thymus.....	1	1	0	0
13. Thyroid.....	2	2	0	0
14. Adrenal glands.....	4	4	0	0
15. Intestines.....	5	5	0	0
16. Kidney.....	3	3	1	0
17. Urinary bladder (in nerve)	3	3	1	++
18. Penis.....	1	2	0	+
19. Lymph nodes.....	3	3	0	0
20. Bone marrow.....	4	4	0	0
21. Bone and cartilage.....	2	4	0	0
22. Mammary gland.....	1	1	0	+
23. Nipple (in muscle).....	1	1	1	+
24. Parotid gland (in muscle)	1	1	1	++
25. Ear.....	2	2	0	0
26. Lip.....	1	1	0	+
27. Larynx.....	3	3	0	+
28. Tongue.....	2	5	3	++
29. Skeletal muscle.....	7	11	9	+
30. Umbilical cord.....	2	2	0	0

REPORT OF CASE

Clinical Background.—On Oct. 6, 1945, the father brought to Gorgas Hospital an infant who had been delivered one and one-half hours earlier at home. The midwife, recognizing prematurity and stating that she had never seen such a "gray" placenta, insisted that the child be brought to the hospital.

From the Board of Health Laboratory, Gorgas Hospital, Ancon, Canal Zone, and the New York University College of Medicine.
1. Wolf, A.; Cowen, D., and Paige, B. H.: Myelitis, *Am. J. Path.* 15: 657-694, 1939; *Toxoplasmosis, Clinical Diagnosis of Infantile or Congenital Toxoplasmosis*, Arch. Neurol. & Psychiat. 48: 1-19, 1942.
2. Sabin, A. B.: *Toxoplasmosis*, in Brennemann, J., *Practice of Pediatrics*, Hagerstown, Md., W. F. Prior Company, Inc., 1943, vol. 4, chap. 7, pp. 43-54.
3. Weinman, D.: Human Toxoplasma, *Puerto Rico J. Pub. Health & Trop. Med.* 20: 125-161, 1944.
4. Pratt-Thomas, H. R., and Cannon, W. M.: Systemic Infantile Toxoplasmosis, *Am. J. Path.* 22: 779-795, 1946.
5. Zuelzer, W. W.: Infantile Toxoplasmosis, with a Report of Three New Cases, Including Two in Which the Patients Were Identical Twins, *Arch. Path.* 38: 1-19 (July) 1944.
6. Callahan, W. P., Jr.; Russell, W. D., and Smith, M. C.: Human Toxoplasmosis, *Medicine* 25: 343-397, 1946.

On admission no abnormalities other than prematurity were recognized; examination purposely was limited. The child was placed in an incubator. He became cyanotic, respirations were



Fig. 1.—Section of cerebral cortex showing intense inflammatory reaction. × 175.



Fig. 2.—Individual parasites in brain. × 1,400.

gasping and irregular, and the infant died nine hours after admission, ten and one-half hours after birth. There were no convulsions. The placenta that had been carefully brought in

with the child was rejected at the admitting office of the hospital and discarded.

The family, mother, father and their 20 month old son had lived for about ten months in Rio Abajo, a fairly well sanitized community about 7 miles (11.3 kilometers) from the City of Panama. Their house, of mixed wood and concrete construction, was located at the edge of the village not more than 50 yards (45.7 meters) from the "bush." Many less pretentious houses were in the neighborhood. Cats, dogs, goats, chickens, rats and pigeons were in the yard or close by. Mosquitoes were the bane of the neighborhood. No other insects were reported as troublesome, but most of the dogs were infested with *Rhipicephalus sanguineus*, the common dog tick. The family was admitted to the hospital for study.

The mother was a 24 year old Panamanian multipara. At the age of 16 years she had two abortions (each at three months), each by a different consort. Her next child (by the current husband) was now 20 months of age. The fourth was the infant with toxoplasmosis. Her last menstrual period started Feb. 18,

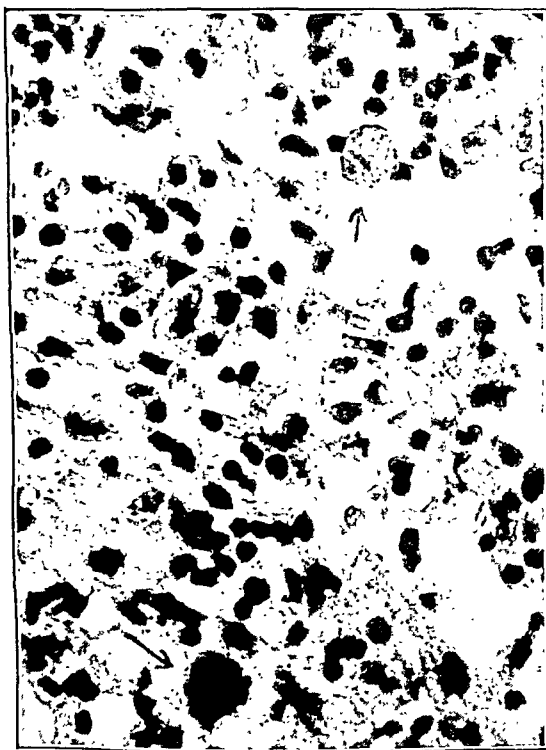


Fig. 3.—Section of fifth cranial nerve showing two nests of parasites. $\times 1,000$.

1945. She felt perfectly well during her pregnancy. On October 6 she went into labor, and "a few hours" later was delivered without difficulty. The puerperium was uneventful. Physical examination, routine hematologic studies, urinalyses, stool examinations, ophthalmologic examination, electrocardiogram and roentgenograms of the skull and chest revealed no abnormality. The Wassermann reaction of the blood was negative; the Kahn reaction was positive.

The father was a 30 year old Colombian mestizo, who had lived in Panama for five years. He had a history of gonorrhea, inadequately treated syphilis, and vague fever several years previously. In other respects, the personal history, family history, physical examination, roentgenograms of the skull and chest and an electrocardiogram revealed no abnormality. A small patch of healed chorioretinitis was found "at 6 o'clock near the periphery of the right eye." Wassermann and Kahn reactions of the blood were positive.

The 20 month old son was in excellent health. Complete examination of a type similar to that conducted on the father revealed no abnormality. His fundi were normal.

Necropsy.—Gross Examination: Permission for autopsy could not be obtained until thirty-one hours after death. During this period the body was kept in the refrigerator at a temperature of 32 to 38 F.

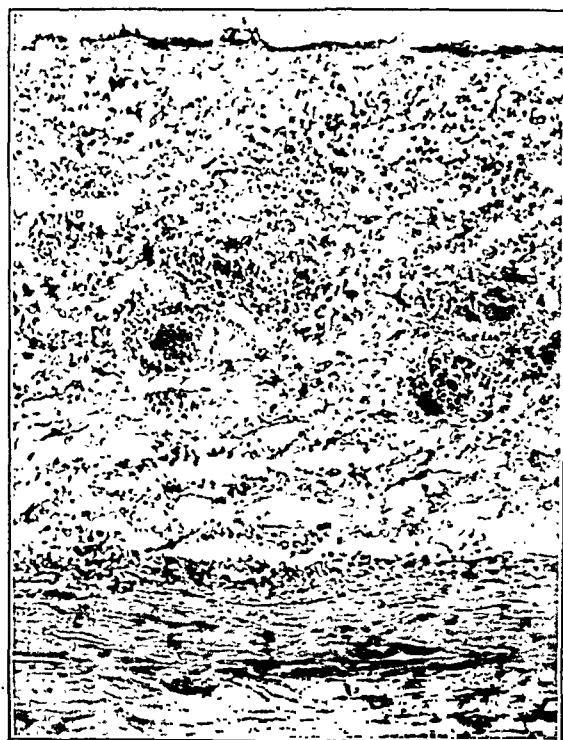


Fig. 4.—Intense choroiditis. $\times 175$.

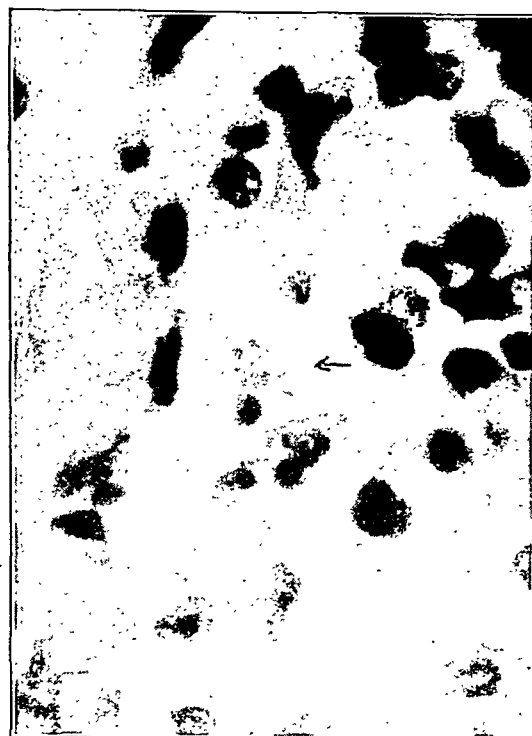


Fig. 5.—Small nest of parasites in eye. $\times 1,400$.

The infant weighed 1,070 Gm. and measured 38 cm. from vertex to heel. The estimated intrauterine age was $6\frac{1}{2}$ to 7 months. The head appeared somewhat smaller than usual,

but its circumference was not measured. The fontanelles were flat.

When the calvarium was removed much bloody cerebrospinal fluid gushed forth. (In a test tube, after an hour, a thick layer of white, yellow and gray granular material settled to the bottom. The supernatant fluid was reddish brown and turbid.)



Fig. 6.—Section of spinal cord showing symmetric calcification. $\times 8$.

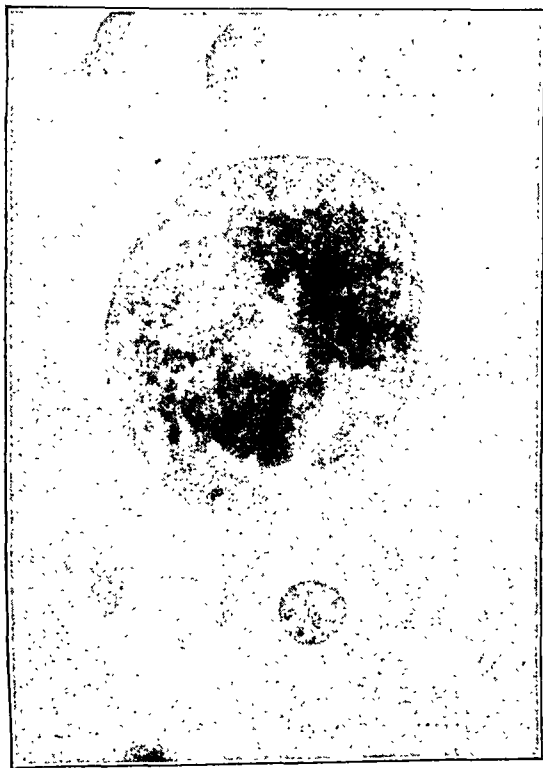


Fig. 7.—Nest of parasites in spinal cord. $\times 1,400$.

The brain was a collapsed, gelatinous, almost shapeless mass which lay on the floor of the middle cranial fossa and was covered by hemorrhagic leptomeninges, in portions of which yellowish zones were seen. On removal, the cerebrum was so soft that it could hardly be handled, and no statement can be made concerning the convolitional pattern. The tissue was

pale, but flecked with conspicuous firm yellow granules. The cerebellum could not be identified even after long search.⁷ The brain stem was firmer, and the pons and medulla were recognizable as such. The spinal cord was soft, but its identifying landmarks were discernible. Sectioning of the pons, medulla and cord disclosed gritty, yellowish areas, averaging 0.2 cm. to 0.3 cm. in diameter; they showed a tendency to symmetry in location. The pituitary was of average size. The pattern of the skull appeared normal.

The lungs were atelectatic. All other organs seemed normal on gross examination.

Histologic Examination (the table): Brain. Scattered in the cortex and brain stem were many areas of focal necrosis with an intense granulomatous inflammatory reaction featuring an infiltration of macrophages, lymphocytes and plasma cells. In the areas of necrosis was an extensive deposition of calcium salts that could be demonstrated beautifully by the von Kossa stain. In the brain stem the zones of necrosis tended to be symmetric, but in the cerebral hemispheres no pattern could be discerned and in some areas there was a diffuse inflammatory



Fig. 8.—Nest of parasites in glomerular tuft. $\times 1,200$.

reaction in addition to the focal one. A moderately intense leptomenigitis was present and some blood pigment was noted in macrophages scattered in the meshes of the pia-arachnoid. Toxoplasmas disposed singly, in small groups and in pseudocysts were found without prolonged search. The individual parasites averaged 5 microns in length and 1 micron in width. In the spinal cord the inflammatory reaction was slight, but the parasites were seen in sections from cervical, thoracic and lumbar levels.

Eye. An intense granulomatous chorioretinitis was present. Parasites were few and could be found only after prolonged search, as small cystlike aggregates of three or four toxoplasmas.

Optic nerve. No parasites were seen, although an inflammatory reaction was present.

Fifth cranial nerve. Many toxoplasmas and an intense inflammatory reaction were seen.

7. How much of the necrosis and collapse of the cerebral hemispheres was ante mortem and how much was post mortem was difficult to ascertain. The absence of cerebellum and the fact that in many instances in which autopsies had been done on infants in similar circumstances no such complete collapse had been seen suggested strongly that most of the changes were ante mortem.

Lungs. Moderate atelectasis and a slight inflammatory reaction were noted. No parasites were found. Evidence of congenital syphilis was not recognized.

Heart. A barely recognizable diffuse inflammatory reaction was present. No parasites were seen.

Liver. No parasites were noted. There was no evidence of congenital syphilis.

Kidneys. Caught within glomerular tufts were a few small nests of toxoplasmas that had excited no inflammatory reaction.

Bladder. In the lamina propria of the mucosa and in the muscular layers was a diffuse inflammatory reaction. Several small nests of toxoplasmas were found in nerve bundles.

Mammary gland. No parasites were seen in a section of the gland. In the adjacent skeletal muscle toxoplasmas were present.

Parotid gland. The glandular elements appeared normal. In adjacent skeletal muscle toxoplasmas were seen.

were injected into the peritoneal cavity of guinea pigs but failed to infect them. No toxoplasmas were seen in thick



Fig. 9.—Nest of parasites in bladder. $\times 1,400$.

Tongue. Several groups of toxoplasmas were present. The inflammatory reaction was moderate.

Skeletal muscle (leg and back). Toxoplasma pseudocysts were relatively numerous.

Femoral nerve. Many toxoplasmas and an intense inflammatory reaction were present.

Thymus, thyroid, spleen, pancreas, adrenal glands, intestine, lymph nodes, bone marrow and umbilical cord. No lesions or parasites were seen.

Experiments.—**Infant:** Guinea pigs inoculated intraperitoneally with emulsions of brain suspended in the hemorrhagic spinal fluid died in ten days. Toxoplasmas were easily demonstrated in the peritoneal exudate, in the brain and many other organs of these guinea pigs. Toxoplasmas recovered from these pigs were lethal on subinoculation to other guinea pigs, and the strain was carried through several series of guinea pigs. (It is of interest that the parasites were viable after thirty-one hours in the refrigerator at a temperature of 32 to 38 F.)

Mother: Spinal fluid, venous blood, cervical and vaginal washings, all taken from the mother ten days after delivery,



Fig. 10.—Nest of parasites in skeletal muscle of tongue. $\times 350$.



Fig. 11.—Nest of parasites in skeletal muscle of leg.

films of this material or in her breast milk. No parasites were found in 150 sections of a biopsy of her deltoid muscle taken

at the same time. An emulsion prepared from crushed deltoid muscle was injected into guinea pigs, and produced no infection.

Father: Venous blood failed to infect guinea pigs inoculated intraperitoneally. No parasites were seen in thick films of his prostatic fluid.

COMMENT

Pratt-Thomas and Cannon⁴ listed 20 previously noted cases of toxoplasmosis confirmed by autopsy and added 1 of their own. Callahan, Russell and Smith⁵ recently added 5 cases in infants. The case reported here, the 27th, is the twenty-seventh proved by necropsy and the twenty-first in an infant. This is the first proved case of congenital toxoplasmosis on the Isthmus of Panama, although 5 other cases of toxoplasmosis have been seen.⁸

The absence of any symptoms of the disease in the mother was perplexing as usual. It is reasonable to assume that the infection of the fetus occurred rather late in the pregnancy, and yet the mother remembered no illness. Efforts to demonstrate a latent infection in maternal body fluids and skeletal muscle were unsuccessful.

The number of organs involved in this and other cases⁹ indicated that toxoplasmosis is a systemic disease with a predilection for the central nervous system but the ability to appear in almost any organ. The parasitization of nerves (fifth, cranial, femoral and nerves in bladder) has not been described previously in human beings to the best of our knowledge. Johnson,¹⁰ however, recorded extensive involvement of nerves in toxoplasmosis in pigeons.

The widespread incidence of toxoplasmosis in animals¹¹ and the relative lack of host specificity of the parasite suggest that human infection occurs by transmission of the disease from an animal reservoir. Although transmission may be direct, the possibility of the existence of an insect vector must be considered. Since the disease has been described in various parts of the world, it is unlikely that either the animal reservoir or the insect vector—if they exist—is exotic. On the basis of very little evidence we would like to suggest the possibility that pigeons may play an important role. Johnson¹⁰ described an epidemic of toxoplasmosis in carrier pigeons in the Canal Zone, and pigeons were noted close to the home of the patient described in the current case report. These birds were also seen in the neighborhood of the homes of 2 patients with asymptomatic toxoplasmosis on the Isthmus of Panama. (Departure of one of us, B. H. K., from the Canal Zone prevented further investigation of this possibility.) Mosquitoes might qualify as a vector.

Parenthetically, the occurrence of severe congenital encephalomyelitis in another male infant, stillborn after six months of intrauterine life, should be mentioned. In this infant, the cerebral hemispheres were small, soft, collapsed and covered by reddish brown leptomeninges. Histologically an intense granulomatous inflammatory reaction similar to that seen in the current case of toxoplasmosis was present. Parasites were not demonstrated, however, either visually or by guinea pig inoculations; nevertheless we believe that this might well represent a "burnt-out" case of toxoplasmosis.

SUMMARY

A case of toxoplasmosis, the twenty-seventh authenticated by autopsy, the twenty-first in an infant and the first of the congenital type on the Isthmus of Panama, is reported. Parasites were found in the brain, spinal cord, eye, fifth cranial nerve, femoral nerve, kidney, urinary bladder nerves and skeletal muscles of the tongue, cheek, chest, leg and back. Attempts to demonstrate a latent infection in the mother were unsuccessful. On extremely tenuous grounds the possibility is suggested that pigeons may act as an animal reservoir.

8. Kean, B. H., and Grocott, R. G.: Asymptomatic Toxoplasmosis, *Am. J. Trop. Med.*, to be published.

9. Weinman,³ Zuelzer,⁵ Callahan, Russell and Smith.⁶

10. Johnson, C.: Annual Report of the Gorgas Memorial Laboratory, 1943, Washington, D. C., Government Printing Office, 1944, pp. 15-16.

11. Maxwell, R. D.; Coulston, F.; Binckley, E. C., and Jones, V. P.: Mammalian and Avian Toxoplasmosis, *J. Infect. Dis.* 76: 1-14, 1945.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports. HOWARD A. CARTER, Secretary.

IMPROVED NEBULIZER PREMO
ACCEPTABLE

Manufacturer: Premo Pharmaceutical Laboratories, Inc., 443 Broadway, New York 13.

The Improved Nebulizer Premo is a device, mainly of glass, for projecting liquids, especially aqueous solutions, as extremely fine mists, or aerosols. This makes it possible to administer by inhalation nonvolatile medicaments, like epinephrine and penicillin. The construction of the device is such that practically all of the liquid placed in it may be nebulized.



Improved Nebulizer Premo.

The Council on Pharmacy and Chemistry has accepted a preparation of penicillin for administration by this method. There is evidence that a patient who inhales, for instance, 50,000 units of penicillin will show a concentration of 0.1 to 0.2 units of penicillin per cubic centimeter of serum for a period as long as two hours after the inhalation.

Because of the fineness of the division of the nebulized liquid, the process of administration is not fast. One cubic centimeter of water required four and one-half minutes to be completely nebulized when compressed air was used and required seven minutes by manual employment of the rubber bulb.

The Council voted to include the Improved Nebulizer Premo in its list of accepted devices.

OTARION HEARING AID MODEL E1,
ACCEPTABLE

Manufacturer: Otation Hearing Aids, 448 North Wells Street, Chicago 10.

This instrument is a self-contained hearing aid, with the battery compartment at the lower end of the case. The case is a die-cast magnesium alloy, coated with Vinyl Resin finish. A side-hinged full-length back cover gives access to the batteries and the two tubes, which are not covered. One magnetic type receiver is used and is connected to the amplifier by means of a plastic-covered cord with plugs at both ends.

Two wheel-type controls are placed on the top of the case. One is a volume control. The other is a combination on-off tone control having an off position and three tone positions. A detachable wearing clip fastens to the back of the case.

Dimensions and Weight

Dimensions: 130 by 67 by 22 mm. (5 $\frac{1}{8}$ by 2 $\frac{5}{8}$ by $\frac{7}{8}$ inch).

Weight: Approximately 219 Gm. (7 $\frac{1}{2}$ ounces) (with batteries).

Battery Drain Data	Measured Voltage	Measured Current
A, zinc and carbon, 1.5 volts.....	1.3 volts	55 milliamperes
B, zinc and carbon, 30 volts (Quiet)....	29 volts	0.46 milliamperes
(Squealing)	29 volts	0.4 milliamperes

Acoustical Gain

Measurements were made of the acoustical gain in decibels (sound pressure in 2 cc. coupler in decibels above sound pressure at microphone, with microphone set in 30 by 20 cm. baffle) with the input level held at 0.02 dyne per square centimeter.

The following tabulation gives typical results obtained with the volume control full on, for two settings of the tone-control at each of seven frequencies:

Frequency	256	512	1,024	1,200	2,250	3,100	4,096 cycles
Tone: 1 dot.....	33	36	41	51	40	32	17 db.
Tone: 3 dots.....	22	30	41	50	40	32	17 db.

Approximate values of maximum sound pressure levels at four frequencies observed in the 2 cc. coupler with volume set for full gain and tone setting "1 dot" are shown below:

Frequency	Input Level	Maximum Output Level
600 cycles	65 decibels	103 decibels
1,024 cycles	70 decibels	111 decibels
1,200 cycles	70 decibels	114 decibels
2,048 cycles	65 decibels	100 decibels

Intelligibility tests (random words) were made with a person of normal hearing seated inside a booth giving about 30 decibels sound reduction. The speaking person was outside the booth using a normal tone of voice. Score made under these critical conditions was 40 per cent. The instrument was quiet, but low amplification caused the low score. It appeared that the instrument would be satisfactory for subjects requiring moderate amplification. It could not be recommended in severe cases of deafness.

On the recommendation of the Consultants on Audiometers and Hearing Aids, the Council on Physical Medicine voted to include the Otation Hearing Aid, Model E1, in its list of accepted devices.

PARAVOX HEARING AID, MODEL XTS, ACCEPTABLE

Manufacturer: Paraphone Hearing Aid, Inc., 2056 East Fourth Street, Cleveland 15.

This self-contained hearing aid comes in a plastic-coated metal case, with the battery compartment at the lower end of the case. Access to the batteries is made possible by a sliding cover plate half the length of the instrument. The amplifier remains well protected in the upper half of the case when the battery cover is removed. A crystal type receiver is connected to the amplifier by means of a 76 cm. (30 inch) plastic covered cord, with plugs at each end.



Paravox Hearing Aid,
Model XTS.

There are two wheel-type control knobs on the top of the instrument, one to regulate the volume and the other to select the tone (three positions) and turn off the aid. A wearing clip is

fastened to the front of the case directly above the microphone.

Dimensions and Weight

The dimensions are 127 by 63 by 19 mm. The weight (with batteries) is approximately 173 Gm. (6 ounces).

Battery Drain Data	Measured Voltage	Measured Current
A: Zinc-carbon, 1.5 volts.....	1.4 volts	40.00 milliamperes
B: Zinc-carbon, 30 volts (Quiet)....	29.0 volts	0.60 milliampere
(Squealing).....	29.0 volts	0.60 milliampere

Acoustical Gain

Measurements were made of the acoustical gain in decibels (sound pressure in 2 cc. coupler in decibels above sound pressure at microphone, with microphone set in 30 by 20 cm. baffle) with input level held at 0.02 dyne per square centimeter.

The following tabulation gives typical results obtained with the volume-control full on, for two settings of the tone control at each of seven frequencies:

Frequency.....	256	512	1,024	1,200	2,250	3,100	4,096 cycles
Tone: 1 dot.....	45	58	66	69	48	61	58 decibels
Tone: 3 dots.....	30	43	52	55	29	38	35 decibels

Approximate values of maximum sound pressure levels at four frequencies set up in the 2 cc. coupler were determined with the volume set for full gain and tone setting at one dot:

Frequency	Input Level	Maximum Output Level
600 cycles	60 decibels	114 decibels
1,024 cycles	60 decibels	120 decibels
1,200 cycles	60 decibels	123 decibels
2,048 cycles	60 decibels	103 decibels

Intelligibility tests of random words were made with a person of normal hearing seated inside a booth giving about a 30 decibel reduction in sound. The speaking person was outside the booth using normal speaking voice. The score made under these critical conditions was 61 per cent.

On the recommendation of the Consultants on Audiometers and Hearing Aids, the Council on Physical Medicine voted to include the Paravox Hearing Aid, Model XTS, in its list of accepted devices.

MICROTONE AUDIOMATIC HEARING AID MODEL T4 ACCEPTABLE

Manufacturer: The Microtone Company, 4602 Nicollet Avenue, Minneapolis 9.

The Microtone Audiomatic Hearing Aid, Model T4, is a plastic-cased, self contained instrument with the battery compartment at the lower end of the case. Half of the back is removable for access to the battery and is secured by a snap catch. A crystal receiver is connected to the instrument by a plastic-covered cord.

A three position lever switch at an upper corner of the instrument has an off position and two tone positions. The wheel-type volume control is at the other upper corner of the case. The wearing clip is at the center on the front of the case.

Dimensions and Weight.—Dimensions 127 by 64 by 25 mm. Weight (with batteries) 255 Gm. (9 ounces).

Batteries (Zinc and Carbon)	Measured Voltage	Measured Current
A 1.5 volts.....	1.3 volts	46 milliamperes
B 30 volts (Quiet)....	29 volts	0.4 milliampere
(Squealing)	29 volts	0.5 milliampere



Microtone
Audiomatic
Hearing Aid
Model T-4

Acoustical Gain.—Measurements were made of the acoustical gain of the instrument in decibels. This is the decibel difference in sound pressure between the pressure at the face of the microphone opening (with instrument set in 40 by 20 cm. baffle) and the pressure produced by the receiver in a 2 cc. coupler. The microphone sound pressure was held at a level 40 decibels above 0.0002 dyne per square centimeter. Following is a tabulation of typical results in decibels:

Frequency	256	512	1,024	1,200	2,250	3,100	4,096
Tone-control "up".....	30	41	54	57	49	47	43
Tone-control "down"....	25	32	51	55	44	45	38

Maximum Output Pressure.—Measurements were made of the approximate maximum sound pressures the instrument would produce in the 2 cc. coupler with the instrument set for full gain and "up" tone position. Levels are in decibels relative to 0.0002 dyne per square centimeter. Results are shown below:

Frequency	Input Level	Maximum Output Level
600 cycles	65 decibels	107 decibels
1,024 cycles	65 decibels	117 decibels
2,048 cycles	65 decibels	102 decibels
2,750 cycles	65 decibels	111 decibels

Intelligibility tests (random words) were made with a person of normal hearing seated inside a booth giving a sound reduction of about 30 decibels. The speaking person was outside the booth using a normal tone of voice. The score made under these critical conditions was 30 per cent. Instrument background noise caused the low score. A deafened person should attain much better results.

On the recommendation of the Consultants on Audiometers and Hearing Aids, the Council on Physical Medicine voted to include the Microtone Audiomatic Hearing Aid, Model T-4, in its list of accepted devices.

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SATURDAY, JANUARY 10, 1948

THE ETIOLOGY OF APICAL SCARS

Fibrous scars accompanied regularly by local anthracosis and emphysema and sometimes by fibrotic, caseous or calcific nodules are commonly found at necropsy in the apexes of one or both lungs. These have long been accepted as tuberculous scars. This interpretation has recently been challenged by Medlar,¹ whose data warrant critical examination before the old concept is discarded.

Medlar analyzed data on 1,400 necropsies in cases of unexpected death in the Medical Examiner's Department of the Borough of Manhattan. Of this number, 141 were excluded from further consideration because of extensive pleural or pulmonic disease. The 1,259 remaining cases, in which 960 subjects were white and 299 were Negro, were analyzed according to race, age and apical scars in relation to presence or absence of tuberculous lesions. Calcified or caseous foci or tuberculous cavity in the lung, or similar lesions elsewhere, were accepted as diagnostic of tuberculosis.

Apical scars were present in 48.1 per cent of white subjects who had evidence of tuberculosis and in 31.9 per cent of those without tuberculous lesions; the corresponding figures for Negroes were 14.7 and 8 per cent. The apical scars were related to age; none were found in 106 persons under 20 years of age; 65.9 per cent of 290 persons over 60 years of age had scars. The corresponding figures for tuberculous lesions in these two groups were 21.7 and 88 per cent. The apical scars were commoner in white persons than in Negroes at corresponding ages, and commoner in men than in women. They were bilateral in 97.2 per cent. Tuberculous foci were found contiguous to or in apical scars in 33 cases. In addition, 20 persons who had apical tuberculous lesions had no apical scars. Forty-five persons had apical tuberculous lesions but were excluded from the analysis because they had dense pleural adhesions.

Two separate questions are at issue: (1) Are the apical scars tuberculous and, if so, (2) are they the result of a postprimary hematogenous dissemination of tubercle bacilli or of infection by some other method?

Rejection of the tuberculous causation for the apical scars was based on five points: (a) Apical scars occurred as frequently in persons without evidence of tuberculous lesions as they did in those with tuberculous foci. (b) The bilateral and symmetric pattern of the apical scars bore no resemblance to the asymmetric and scattered distribution of the tuberculous lesions. (c) Tuberculous lesions occurred in the apex with or without apical scars being present. (d) Apical scars occurred in lower lobes only when they occupied an apical position, although tuberculous foci were found in the upper portion of the lower lobes when they occupied their normal site. (e) The differences noted in relation to sex and race were not accounted for by acceptance of a tuberculous etiology.

The incidence of tuberculous lesions (75.2 per cent in whites and 61.5 per cent in Negroes) was considerably less than that recently reported from Baltimore² (90 per cent) and from Chicago³ (88.8 per cent). This may indicate that some tuberculous lesions were overlooked; special methods of detection were not used as in the latter two reports. The data in table 1 of Medlar's article show a parallelism between the incidence of apical scars and tuberculous lesions. Thus, 48.1 per cent of white persons with tuberculous lesions had apical scars and only 31.9 per cent of those without tuberculosis had the scars. The figures for Negroes were similar although lower. The bilateral and symmetric pattern of the apical scars in contrast to the asymmetric and scattered distribution of the tuberculous lesions does not disprove the tuberculous nature of the former. Many of the latter, no doubt, were the residues of primary infections which are known to be widely scattered in the lungs. Some of the tuberculous lesions in the apex without accompanying scars might, on microscopic examination, be found to be evolving to apical scars. Factors of time, resistance, exact site of infection and proximity of the lesion to the pleura might determine the type of anatomic lesion which would eventually result. The observation that apical scars occur in the apexes of lower lobes when they are elevated to form part of the dome of the lung speaks for a common etiologic basis rather than a different one. The sex difference in incidence of apical caps parallels, although at a lower level, those seen in tuberculous lesions. Factors of resistance or susceptibility might explain the differences noted in the racial groups as well as in the sexes.

1. Medlar, E. M.: Apical Scars; Their Etiological Relationship to Tuberculous Infection, *Am. Rev. Tuberc.* 55: 511 (June) 1947.

2. Carnes, W. H.: The Present Incidence of Tuberculous Infection, *Bull. Johns Hopkins Hosp.* 70: 101 (Feb.) 1942.
3. Steiner, P. E.; Stanger, D. W.; Bolyard, M., and Marcovitch, A. W.: The Quantity of Focal (Tubercle) Calcium in Human Lungs, *Am. Rev. Tuberc.* 49: 129 (Feb.) 1944.

The theory that the apical scars are the result of a postprimary hematogenous dissemination of tubercle bacilli was rejected because it did not explain the presence of bilateral apical scars in cases which exhibited no tuberculous lesions. Perhaps tuberculous lesions in these cases had virtually disappeared or, as has been suggested, had been overlooked.

Careful consideration must be given to definition of the apical scar. Is it to be defined in the restricted sense of an anthracotic, fibrous scar confined to the pleura, or may it include also diffuse fibrous and even nodular caseous and calcific lesions immediately beneath the pleura? On microscopic sections made through the apex a clearcut distinction is often impossible; the lesions merge into each other with respect to location, histologic type and stage of evolution. Scars in the apical pleura frequently show evidence that subjacent pulmonic tissue together with its lesions has been retracted and incorporated into the scar.

Possibly this problem cannot be solved by statistical methods, but it might yield to morphologic or experimental studies.

EXOTIC DISEASES

In this issue of *THE JOURNAL*, page 81, appears a case report by Levy and Yiengst¹ of kala-azar in New York City. This patient had been away from endemic areas of visceral leishmaniasis for seventeen to nineteen months, an incubation period not unusual in this disease. Preliminary physical examination revealed vague abdominal tenderness, loss in weight, fever and mild reddening of the pharynx but was otherwise negative. Observations of this sort might easily indicate any one of many other maladies common to the United States. Fortunately in this case the necessary medical curiosity combined with excellent laboratory facilities determined correct diagnosis and provided for proper treatment.

Without typical symptoms, differential diagnosis included consideration of malaria, leukemia, bacillary dysentery, typhoid, paratyphoid, undulant fever, typhus, tularemia and others. Diagnosis became apparent only after the second biopsy of bone marrow. Adequate laboratory facilities such as are implied in the foregoing account are not available to all practicing physicians in this country. Nevertheless exotic disease must now be constantly suspected.

In World War II several million Americans were transported beyond the limits of the United States, many hundreds of thousands to areas where tropical disease and diseases foreign to this country are endemic. Moreover, postwar civilian and military travel to these areas has greatly expanded.

Meleney,² Sawyer,³ Mackie,⁴ Faust⁵ and many others have warned repeatedly of the danger of tropical disease occurrence in the United States. Diseases probably most frequently met will be malaria, bacillary dysentery, amebiasis, filariasis and intestinal protozoan infestations. These will be seen in areas where they were formerly rarities or nonexistent. Others, such as kala-azar, African and South American trypanosomiasis, cutaneous leishmaniasis, schistosomiasis, yaws and pinta will occur in scattered numbers. Prevalence of leprosy in areas where troops were stationed makes appearance of a few cases after long incubation periods almost inevitable.

Velocity plane travel which allows passengers to travel half around the world from home to destination within the intervals of short incubation periods in part nullifies usual quarantine methods and may allow entrance of patients with yellow fever, plague, cholera and epidemic typhus. Authorities in international health work have indicated that protection for the United States demands lowering of the incidence or stamping out of these communicable diseases in the endemic areas of the world. Effective work of this nature is now being done by the Rockefeller Foundation and in this hemisphere by the Health and Sanitation Division, Institute of Inter-American Affairs.

Most exotic diseases do not constitute epidemic or endemic hazards in the United States because known vectors or intermediate hosts are lacking and high standards of community sanitation prevail. The possibility exists, however, that new appropriate vectors and intermediate hosts may develop and that more virulent strains of the pathogens now common to this country may be imported.

Despite all epidemiologic considerations these diseases are immediate problems to the practicing physician. Proper cure of the patient and primary protection of the community will depend on the physician's diagnostic ability. Accurate typical clinical pictures are given by Strong⁶ and other authors. However, many of the diseases mentioned, such as amebiasis, schistosomiasis, malaria and Chagas' disease, having passed through the acute stage and entered on a mild intermediate or chronic stage, present themselves in the patient in masked form. Symptoms are frequently vague, such as fatigue, recurrent headache, loss in weight, nervousness, palpitation and uneasiness with mild to moderate gastrointestinal distress. In view of the added stress placed in recent years on the

1. Levy, M. D., and Yiengst, M. J.: Kala-Azar: Report of a Case Showing Unusual Leukocyte Response and Prolonged Incubation Period, *J. A. M. A.* 136:81 (Jan. 10) 1948.

2. Meleney, H. E.: The Problem of Certain Tropical Diseases in the War, *New England J. Med.* 227:159-162 (July 30) 1942; Problems of Treatment of Tropical Diseases in Returning Military Personnel, *New York State J. Med.* 44:2105-2108 (Oct. 1) 1944.

3. Sawyer, W. A.: Public Health Implications of Tropical and Imported Diseases, *Am. J. Pub. Health* 34:7-14 (Jan.) 1944.

4. Mackie, T. T.: War and the Migration of Tropical Diseases, *J. A. M. A.* 122:1-4 (May 1) 1943; Tropical Diseases—a Postwar Health Program, *New York State J. Med.* 43:1509-1513 (Aug. 15) 1943.

5. Faust, E. C.: The Medical Aftermath of Global War, *Mod. Hosp.* 61:108 (Sept.) 1943.

6. Strong, R. P.: *Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases*, Philadelphia, P. Blakiston's Son & Co., 1942.

psyche and the fact that these same symptoms are frequently met in psychoneurotic patients, differential diagnosis becomes doubly interesting, challenging and difficult.

Current Comment

ADVERTISING AIDS TUBERCULOSIS CAMPAIGN

Early in 1948 the Advertising Council, Inc., will be sponsoring a "Check Tuberculosis" campaign. The project has been undertaken in cooperation with the National Tuberculosis Association, its state and local affiliates, and the U. S. Public Health Service. The purpose of this campaign is educational. During the war the Advertising Council, Inc., aided the government in its campaigns for the sale of war bonds, for recruitment of nurses and in many health projects. Now all various advertising technics will be utilized to emphasize the importance of early diagnosis in tuberculosis and to urge people to have the chest examined with the roentgen ray periodically. Tuberculosis is the first disease to be selected by the Advertising Council, Inc., as a target for a campaign, the reason being that we now possess the necessary technics and methods to eliminate this disease if only all the forces available can be mobilized against it.

EXPERIMENTAL STUDY OF STREPTOMYCIN DOSAGE IN TUBERCULOSIS

On the basis that streptomycin acts as an "antiseptic" chemical retardant, dosage has been computed on the assumption that the action of streptomycin in vitro is dependent on direct concentration and in vivo is likewise dependent on the concentration apparently reaching the tubercle bacillus. Toxic symptoms from the use of streptomycin in man were considered unavoidable. Recent observations in animals, on which such tests can be performed in a controlled manner, reveal that streptomycin produced the same effects in prolonging the lives of these animals against an otherwise lethal infection when given once in five days as when given every day. This is called the "remote sustained threshold action" of streptomycin¹ and includes all its implications as far as treatment of tuberculosis is concerned, even though it is admitted that the apparent action of streptomycin is neither clearly nor fully understood at present. However, one fact appears certain: Whatever beneficial effect streptomycin has on human tuberculosis may be obtained without forcing the use of this antibiotic to the point of injury to the patient. An adequate proving ground for claims that streptomycin used may benefit the tuberculous patient has been established; the history of the tubercle bacillus rise and fall with each treatment. The mental scientific information needed—alleged therapeutic effect of streptomycin in tuberculosis—urgently needed—and

FLUORINE AND DENTAL CARIES

Since fluorine was discovered in drinking water¹ and identified as the causative agent for mottled enamel,² many reports have appeared showing the widespread distribution of areas of endemic fluorosis. The positive correlation between a concentration of fluorine in potable water of 1 part per million or more and mottled enamel of the teeth of children consuming this water since early infancy has been established. However, the fact that fluorine may have an other than deleterious effect on the teeth of children was first suggested in this country by Dean,³ who commented on the rarity of dental caries in those areas where endemic fluorosis exists. Later,⁴ on the basis of dental examinations of over 7,000 children in twenty-one cities, the conclusion was reached that there exists a general inverse relationship between the fluorine in the drinking water and the caries rate in children continuously consuming the water throughout life. Moreover, Klein⁵ reported that this influence of fluorine can be demonstrated in children who have been exposed to drinking water containing this element for the first time, after reaching school age. There are indications⁶ that the inhibiting effects of fluorine on dental caries can be demonstrated for a long time after removal of the element from the water supply. Furthermore, the suppression of the count of *Lactobacillus acidophilus* likewise endured. This organism was early implicated⁷ in the causation of dental caries; later it was shown⁸ that fluorine in such concentrations as occur in some potable waters suppresses acid production by the organism though not necessarily inhibiting its growth. A study of the available evidence led McClure⁹ to state that from 0.5 to 1 part per million of fluorine in the drinking water is instrumental in reducing caries and that the evidence does not indicate that this constitutes a health hazard. The neighboring cities Newburgh and Kingston, N. Y., both originally used water low in fluorine. In 1944 the addition of 1 part per million of fluorine to the water supply was begun in Newburgh but not in Kingston. Recently, a report¹⁰ compared the acidophilus count in the saliva of a large number of children 12 to 14 years of age in both cities with that before the experiment was begun. In Kingston the frequency of high and low counts remained in 1947 as it was in 1944; in Newburgh a progressive drop in the frequency of high counts and an increase in the proportion of low counts had occurred, thus indicating results in the direction of suppressing the acid-producing organisms in the mouth. Additional significant data are eagerly awaited from this study; further favorable results will mark progress in conquering a most vexing medical problem.

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2. Smith, M. C.; Lanz, E. M., and Smith, H. V.: *Technical Bulletin 32, University of Arizona Agricultural College*, 1931.
3. Dean, H. T.: *Pub. Health Rep.* **53**: 1443, 1938.
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5. Klein, H.: *Health Rep.* **60**: 1462, 1945.
6. Arnold, F. A., Jr., and Elvove, E.: *Pub. Health Rep.* **57**: 1155, 1942.
7. Rowley, M.; Hard, D. G., and Keller, M.: *Dent. Research* **19**: 391, 1941.
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10. B.: *Science* **106**: 292, 1947.

ORGANIZATION SECTION

Miscellaneous

A CABINET DEPARTMENT OF HEALTH, EDUCATION AND SECURITY

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and

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(This article has been approved by the Bureau of Legal Medicine and Legislation of the American Medical Association.)

Overshadowed by more spectacular legislation, the proposal to create a cabinet department to administer the health, education, public welfare and social security functions of the federal government has received little attention. A bill for this purpose, S. 140, was introduced early in the 80th Congress by Senators Fulbright and Taft. The proposal is in line with the steady increase in federal participation in fields which have in the past been largely the concern of state and local agencies. The bill in itself adds no new federal functions and grants no new authority, but it would add prestige to existing functions by giving them status in the highest level of government: the President's cabinet. In this connection it may have great potential significance.

STATE AND FEDERAL RELATIONSHIPS IN HEALTH, EDUCATION AND SECURITY

The Constitution gives Congress and the federal government the power "to promote the general welfare," but it has been generally understood that health, education and security functions are left for the most part to state and local authorities. Under the general welfare clause the federal government has gradually increased its activities in social fields in a rather haphazard, largely unplanned fashion. Legislation for this purpose tends to take two major forms, (1) expanding services performed by federal agencies and (2) increasing federal participation by grants-in-aid to the states for designated uses. Usually the promise of federal funds has been conditioned on requirements for matching state and/or local expenditures. Indeed, federal legislation has often had the deliberate purpose of stimulating state expenditures which probably would not have been made without this incentive. As a result, both state and federal governments have steadily increased their functions in health, education and security fields, and there is no evidence of any change in this trend.

The result of a succession of piecemeal legislation is that the relationship between federal and state-local responsibility has become hazy. It is not clear where local responsibility leaves off and federal responsibility begins. While the states tend to be jealous of federal encroachment, at the same time they are glad to receive federal funds. It may be worth while to consider briefly the present status of federal-state relationships in these activities.

WHAT IS THE PRESENT ROLE OF THE FEDERAL GOVERNMENT?

In the field of education state and local jurisdictions still carry the major share of responsibility. The federal role, although increasing, is still relatively minor. It is possible that federal participation in education may increase further, particularly in the poorer states which have yet to provide adequate educational facilities for their students. So far, how-

ever, federal activities in education are confined largely to compilation of school statistics, research and advisory services, and to grants-in-aid to states and private institutions for limited special purposes, such as vocational education, training of handicapped persons and scientific research (chart 1).

The federal role is greater in the field of health. There is, of course, an extensive federal medical program for the military services and veterans, but the U. S. Public Health Service is the major agency providing health services for the general public. While this agency is primarily concerned with research and disease prevention, successive legislation has increased its scope of activities for specific health problems: venereal disease, cancer and tuberculosis control, mental illness, hospital construction, etc. In addition, the Children's Bureau has health functions relating to problems of children, notably the administration of federal grants for maternal and child health, child welfare and services to crippled children. While the states have expanded their health services, they have come to be increasingly dependent on grants from the Public Health Service and the Children's Bureau (chart 2).

However, it is in the field of public assistance and social security that the federal government looms largest in the picture. Under the Social Security Act of 1935 the states were induced by the promise of federal matching grants to adopt or extend "categorical" programs of public assistance: old age

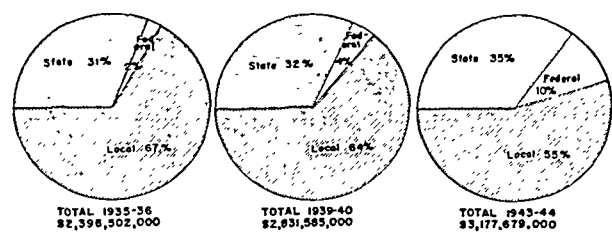


Chart 1.—Governmental expenditures for education by source of funds and fiscal years. The proportion of expenditures for educational purposes coming from federal funds has been increasing, but the federal role is still a minor one. Source: U. S. Office of Education, Statistical Summaries of Education for 1935-1936, 1939-1940 and 1943-1944.

assistance, aid to the blind and aid to dependent children. Total costs for these programs have mounted steadily, and the proportion of federal to state and local funds has risen from about 44 per cent in 1939 to 53.5 per cent in fiscal 1946-1947. The absolute and relative rise in federal funds has occurred even though in recent years the states have been strong financially, while the federal government has incurred a tremendous public debt. Federal control over funds expended through state public welfare agencies is concerned with standards of assistance and administration. While the states have sometimes chafed under these controls, they nevertheless have demanded and obtained continuing increase in federal funds (chart 3).

In the case of other social security programs the picture is confusing. Old age and survivors insurance is completely federalized; the states have no part in it. On the other hand, the states administer unemployment compensation, although the original inducement to adopt this program came from the Federal Social Security Act. Unemployment benefits are paid from state trust funds, but the cost of administration is borne by federal grants. In the case of the railroad workers the picture is again a different one. Both railroad retirement and railroad unemployment and disability benefits are federalized; administration of these programs is in the hands of the U. S. Railroad Retirement Board (table 1). Another major program in a somewhat related field—that of pensions and services for

veterans—is also federalized, although some states have their own veteran programs and a few states pay bonuses or pensions to veterans.

HISTORICAL BACKGROUND OF THE PROPOSAL FOR A CABINET DEPARTMENT

Proposals for a cabinet department for health, education and social welfare functions of the federal government antedate many of the now existing functions in these fields. An early proposal was made in the administration of President Harding, but Congress did not take action at that time. Subsequently, President Hoover sponsored a consolidation of certain federal social activities into a major division of the Department of Interior, under the supervision of an assistant secretary. Again Congress failed to act. With the advent of President Roosevelt's administration in 1933, federal relief, health, educational and other welfare expenditures expanded rapidly. How-

PRESENT PROPOSALS FOR A CABINET DEPARTMENT

In his message to Congress accompanying the reorganization plan of 1946, President Truman said:

" . . . The size and scope of the Federal Security Agency and the importance of its functions clearly call for departmental status and a permanent place in the President's Cabinet. In number of personnel and volume of expenditures the Agency exceeds several of the existing departments. Much more important, the fundamental character of its functions—education, health, welfare, social insurance—and their significance for the future of the country demand for it the highest level of administrative leadership and a voice in the central councils of the executive branch.

"Accordingly, I shall soon recommend to the Congress that legislation be promptly enacted making the Federal Security Agency an executive department, defining its basic purpose,

TABLE 1.—Federal and State Financing of Social Security and Public

Program	Administration		Source of Funds		Expenditures 1946-1947	
	Federal	State and Local	Federal	State and Local	Total	Per Cent Federal
Public assistance:					Benefits:	
Old age assistance.....	Federal Security Agency Social Security Administration Bureau of Public Assistance	51 state welfare agencies plus county and local agencies	General revenue	General revenue	\$913,290,373 ¹	56.5
Aid to dependent children...			General revenue	General revenue	\$25,127,228 ¹	44.5
Aid to the blind.....			General revenue	General revenue	\$33,517,216 ¹	44.7
General assistance..... (public relief)	None		None	General revenue	Benefits: \$144,065,000 ¹	None
Old age and survivors insurance	F. S. A., Social Security Administration, Bureau O. A. S. I.	None	Payroll taxes; O. A. S. I. Trust Fund	None	Benefits: \$125,582,000 ² Administration: \$40,788,000	100.0
Railroad retirement.....	Railroad Retirement Board	None	Payroll taxes, Railroad Trust Fund	None	Benefits: \$173,101,000 Administration: \$4,756,000	100.0
Unemployment compensation, state plans	F. S. A., Social Security Administration, Bureau of Employment Security	51 state unemployment agencies	Payroll taxes	Payroll taxes; 51 unemployment compensation trust funds	Benefits: \$317,817,000 ² Administration: \$53,996,100	Adm: 100 Benefits none
Railroad unemployment compensation	Railroad Retirement Board	None	Payroll taxes, Railroad Trust Fund	None	Benefits: \$46,617,000 ² Administration: \$4,561,000	100.0

1. Administrative costs not yet available. 2. Withdrawn from trust funds.
Source: Social Security Bulletin, September 1947; U. S. Railroad Retirement Board.

ever, the pressure of the economic emergency was such as to push the cabinet proposal into abeyance for the time being, while independent agencies were established to carry out welfare programs. The emergency relief and work relief agencies, of which the most important were Federal Emergency Relief Administration, Works Progress Administration, National Youth Administration, Civilian Conservation Corps and Public Works Administration, have now been disbanded.

During the latter part of the thirties there began a process of consolidation of the remaining health, education and welfare agencies, and under the Reorganization Act of 1939 the Federal Security Agency was created. Within the Federal Security Agency were grouped the Office of Education, the Public Health Service, the Social Security Board, the Food and Drug Administration and the Office of Vocational Rehabilitation. Further additions followed the reorganization plan of 1946. The Social Security Board was reconstituted the Social Security Administration; most of the Children's Bureau was taken from the Department of Labor, and the vital statistics functions of the Census Bureau were added to the Federal Security Agency. Table 2 shows the present units, personnel and expenditures by the Security Agency.

and authorizing the President to transfer to it such units and activities as come within that definition. . . ."

Subsequently, several bills were introduced in Congress to carry out the President's suggestions. Two alternative Senate Bills, S. 140 (Fulbright-Taft Bill) and S. 712 (Aiken Bill) were the subject of hearings in February and March, 1947, before the Senate Committee on Expenditures in Executive Departments. After some amendment, S. 140 was reported out to the floor favorably by the committee. In its report to the Senate, the committee said it " . . . is of the opinion that under a departmental set-up the increasingly important functions of the various activities now incorporated in the Federal Security Agency can be brought into closer accountability to the President and to the Congress, and promote increased economy and efficiency in their operations. . . ." The bill is now ready for discussion and action by the Senate when Congress reconvenes for the second session.

PROVISIONS OF THE FULBRIGHT-TAFT BILL

The Fulbright-Taft bill, S. 140 (table 3) calls for a federal Department of Health, Education and Security, headed by a Secretary of Health, Education and Security. There are to be

three major divisions of the department, each headed by an under secretary. The Under Secretary for Health is to supervise the Bureau of Health; the Under Secretary for Education, the Bureau of Education, and the Under Secretary for Public Welfare, the Bureau of Public Welfare. The bill gives the department no additional functions or authority, but merely lists functions authorized by prior legislation.

Certain transfers are specifically provided. To the Bureau of Health will go the U. S. Public Health Service, the Food and Drug Administration, Freedmen's Hospital and Saint Elizabeths Hospital. To the Bureau of Education will go the U. S. Office of Education, Howard University, the American Printing House for the Blind and the Columbia Institution for Deaf. To the Bureau of Public Welfare will go the Social Security Administration, which in volume of expenditures is by far the most important of the constituent units of the present Federal Security Agency.

who testified confined their objections to the specific wording of the two Senate bills, S. 140 (Fulbright-Taft Bill) and S. 712 (Aiken Bill), and the only real opposition to this grouping of functions came from the members of the medical profession. Their opposition was related to having health grouped with education and security functions, in the fear that health interests would be subordinated to public welfare and social security. Organized medicine expressed itself in favor of a Department of Health or, failing that, an independent health agency. Other groups, such as consumer protection group, and proponents of child welfare, expressed fears that their interests might not be adequately represented in a new department. However, aside from that of members of the medical profession, no testimony at the hearing expressed real opposition to cabinet status for governmental functions in the fields of health, education and security.

Assistance Programs, Fiscal Year July 1, 1946 to June 30, 1947

Taxes Collected 1946-1947	Beneficiaries June 1947	Trust Fund, as of June 30, 1947	Method of Financing
General tax sources	2,271,007	None	Public assistance payments are made by state and/or local welfare agencies, from state and local funds, with the aid of federal grants. The programs are noncontributory; except in a few states, there are no taxes specifically earmarked for this purpose
General tax sources	1,000,475	None	
General tax sources	79,031	None	
General tax sources	335,000	None	General assistance payments are made by state and local welfare agencies, from state and local funds. There is no federal participation at the present time. The programs are noncontributory; except in a few states, there are no taxes specifically earmarked for this purpose
\$1,452,492,000	Primary only: 797,927 Total: 1,832,285 (Includes dependents and survivors)	\$8,728,015,000	No state participation. Financed by Federal Insurance Contributions Tax, at present 1 per cent of wages up to \$3,000 per year on both workers and employers in covered industries, or a total of 2 per cent of taxable payroll
\$380,057,000	Primary: 180,184 Total: 231,213 (Includes survivors)	\$821,858,000	Financed by federal payroll taxes on railroads and employees, on wages up to \$3,600 per year. Tax rate on each rose from 3.5 per cent to 5.75 per cent in January 1947, or a total of 11.5 per cent of taxable payroll
State: \$1,021,504,000 Federal: \$184,823,000	1,006,000 (weekly average)	\$7,869,011,000	Financed by payroll taxes on employers only on wages up to \$3,000 per year in covered industries. Federal tax is 0.3 per cent of taxable payroll; state taxes now average about 1.5 per cent. Administration costs are paid from federal grants to states; benefits are paid from state trust funds
\$141,750,000	24,000 (daily average)	\$859,408,000	Financed by federal payroll taxes on railroads of 3 per cent of wages up to \$3,600 per year. No experience rating provisions. This tax will also pay the costs of temporary disability compensation starting July 1, 1947. No state participation

The department is given the following functions: (a) to promote, foster and encourage the development throughout the nation of services, facilities and activities in the fields of health, education, public welfare and related fields; (b) to collect and analyze statistics and make studies, investigations and reports on conditions, problems and needs in those fields in the United States and in other countries, and to disseminate and make available information in those fields; (c) to make reports and recommendations with respect to the most effective policies and methods for the promotion of health, education, public welfare and related services, including recommendations with respect to legislation and matters of administrative policy; (d) to advise and cooperate with international organizations functioning in those fields, and (e) to administer such federal programs, including grants in aid, and such powers, functions and duties in those fields as are assigned to it or provided through this or subsequent legislative enactment.

OPPOSITION TO THE BILL

Little opposition to the idea of a cabinet Department of Health, Education and Security came out at the hearings on bills S. 140 and S. 172. Representatives of special interests

SIGNIFICANCE OF CABINET STATUS

It would appear that while adoption of this bill would actually mean little change at present in activities covered by the three divisions of the department (at operating levels it would probably be confined to a new letterhead on the stationery), potentially it may have great significance. In the immediate future the Secretary of Health, Education and Security would sit in at cabinet sessions and would have direct access to the President. Even now, without cabinet status, the administrator of the Federal Security Agency is in close contact with the President. Oscar Ross Ewing has recently been appointed to this post, and his views have not yet been made public. However, the previous administrator and the President have both repeatedly stated their proposals for furthering the functions and activities of the Federal Security Agency in a variety of ways: nationalizing unemployment compensation and raising benefit levels; liberalizing coverage and benefit provisions of old age and survivors insurance; increasing federal grants for public assistance; extending public health services, and creating a major new function—an extended, comprehensive plan for compulsory federal health insurance.

To date, Congress has been reluctant to adopt these proposals for greatly increasing federal responsibilities and expenditures along such lines largely because of the heavy taxes which would be necessary to pay for them. A cabinet secretary of health, education and security may be more successful, for he would tend to have greater prestige with Congress.

WOULD A CABINET DEPARTMENT BE MORE EFFICIENT?

A cabinet department might be more efficient if it provided for a real consolidation of constituent units, elimination of duplication and overlapping and cutting down personnel require-

WOULD A CABINET DEPARTMENT BE MORE RESPONSIBLE TO CONGRESS?

Here, again, it is doubtful whether cabinet status per se would count for much. Both administrators of independent agencies and cabinet secretaries must go to Congress for legislative authority and for appropriations, and both have generally asked for constantly increased appropriations and expanding functions. There is no reason to believe that the situation would not be the same with a cabinet Department of Health, Education and Security, but there is some reason to expect that a cabinet

TABLE 2.—*Present Organization and Appropriations of the Federal Security Agency*

Branch or Division	Appropriations or Other Funds Available, Fiscal Year 1947-1948 (In Thousands)				Major Functions: Operation or Administration of	Administrative Head
	Number of Employees, Sept. 30, 1947	Grants-In-Aid and Anticipated Benefits	Administration, Research, Etc.	Total		
"Health" group						
Public Health Service.....	16,232	\$59,300	\$58,458	\$117,848	Public health services; grants to state for health services	Surg. Gen.: Thomas Parran Deputy: James A. Crabtree
Freedmen's Hospital.....	708	.....	2,192	2,192	General hospital	Super.: James L. Hall
St. Elizabeths Hospital.....	2,418	.....	1,550	1,550	Hospital for mentally ill	Super.: Winifred Overholser
Food and Drug Administration.....	1,002	.....	4,531	4,531	Regulating of food and drug purity and labeling	Com.: Paul B. Dunbar
Subtotal.....	20,390	59,390	66,731	126,111		
"Education" group						
Office of Education.....	403	20,365	1,634	21,999	Compilation of school statistics, grants for vocational education	Com.: John W. Studebaker
American Printing House for the Blind.....	...	125	.....	125	Education for blind students	
Columbia Institution for Deaf.....	101	...	260	260	Washington school for deaf	Pres. of Bd.: Percival Hall
Howard University.....	861	...	4,287	4,287	Higher education for Negroes	Pres. of Bd.: Mordecai Johnson
Subtotal.....	1,365	20,490	6,181	26,671		
"Security" group						
Bureau of Employees' Compensation.....	376	10,250	1,316	11,566	Compensation for occupational injury or disease, federal employees	Dir.: William McCauley
Social Security Administration.....	.....	.....	.....	.....	.....	Com.: Arthur J. Altmeyer
Bureau of Old Age and Survivors Insurance.....	11,456	622,000 ¹	35,755	657,755	Old age and survivors insurance	Dir.: Oscar C. Pogue
Children's Bureau.....	255	25,000	1,181	26,181	Child welfare; grants to states for maternal and child health services ²	Head: Katharine F. Lenroot
Bureau Employment Security.....	} 1,216	966,512 ³	948	967,460	Unemployment compensation	Dir.: R. G. Wagenet
Bureau Public Assistance.....		625,000 ³	1,150	626,150	Old age assistance, aid to blind, aid to dependent children	Dir.: James M. Hoey
Other.....	.....	.....	2,430	2,430	Research, coordination, etc.	
Subtotal, S. S. A.....	12,927	2,138,512	41,494	2,179,976		
Subtotal.....	13,303	2,143,762	42,780	2,191,542		
"Unclassified" group						
Office of Vocational Rehabilitation.....	131	18,000	550	18,550	Treatment and retraining of handicapped persons	Dir.: Michael J. Shortley
Office of the Administrator.....	329	850	8,909	4,769	Over-all administration	Admin.: Oscar Ross Ewing Ass't.: Maurice Collins
Subtotal.....	460	18,850	4,459	23,319		
Grand total.....	35,518	2,247,492	120,151	2,367,643		

1. Anticipated benefit payments from O. A. S. I. trust fund.

2. Includes anticipated benefits from state unemployment compensation trust funds of \$900,000,000; federal grants to states of \$55,512,000 for administration of unemployment compensation, and \$300,000 anticipated unemployment benefits to seamen.

3. Federal share only; does not include anticipated state expenditures for old age assistance, aid to blind and aid to dependent children.

4. While the Children's Bureau has important health functions, it is now part of the Social Security Administration and thus included here in the security group.

Source: Federal Security Agency, office of the administrator.

The "security" group of the constituent units of the Federal Security Agency, with about one third of the total personnel, will have control over more than 92 per cent of the total funds available in fiscal 1947-1948. The "health" group, with over half of the personnel, will account for about 5.3 per cent of total anticipated expenditures. "Education" trails a poor third, with less than one twenty-fifth of the personnel and less than 2 per cent of the funds. It would appear that there is some justification for the fear on the part of some persons that educational and health interests in a cabinet Department of Health, Education and Security may be subordinated to "security" interests.

ments. It appears that on the whole the administration of the Federal Security Agency has been effective and efficient. However, the constituent units have functions which are not closely related. As a result, coordination among them has tended to be loose, and the separate branches within the agency have operated much as if they were independent of each other. It is possible that a drive for effective coordination and economy could readily be made under the existing set-up. Cabinet status would not be necessary for this. A cabinet secretary may be more interested in efforts toward further expansion of the functions of his department.

secretary, enjoying greater prestige with the President and with Congress, may be more successful. Indeed, a cabinet secretary is primarily a political figure, whereas an independent career official may be first an administrator and only second a politician.

SHOULD A CABINET DEPARTMENT GO BEYOND MAKING RECOMMENDATIONS?

As clearly stated in the bill, one of the functions to be granted the new department is to make reports and recommendations on legislation and matters of administrative policy. Under a

similar provision of the original Social Security Act, the Social Security Administration has been in the past and is now active in recommending legislation. Recommendations have generally taken the form of proposals for broadening coverage, increasing benefits and raising taxes under present social security programs—and for including compulsory health insurance in social security. The Social Security Board, now the Social Security Administration, has liberally interpreted its function for recommending additional legislation. It is possible that its officials look forward to cabinet status in the hope that their proposals will receive more favorable attention.

SHOULD OTHER AGENCIES BE INCLUDED?

A section of S. 140 delegates to the Bureau of the Budget the task of studying functions now in other agencies and departments of the federal government with a view to possible inclusion in the proposed Department of Health, Education and Security ". . . in the interest of economy and simplicity of administration." Agencies which might thus be considered include the Bureau of Human Nutrition and Home Economics now in the Department of Agriculture, the Railroad Retirement Board, the Federal Public Housing Authority, the Office of Indian Affairs now in the Department of Interior, probation and parole work now in the Department of Justice, educational activities now in the Smithsonian Institution and the Veterans Administration. All these agencies function in fields more or less related to health, education or public welfare, and there may be others. The Bureau of the Budget is directed to submit its recommendations to Congress in a designated period of time. The effect of their inclusion (which, however, would probably be opposed by those who have special interests in these agencies) would be to expand further the functions, personnel and expenditures of the department.

PUBLIC ASSISTANCE AND THE FEDERAL GOVERNMENT

At the present time there is no federal participation in general assistance, or direct public relief, other than for the categorical aid programs (old age assistance, aid to the blind and aid to dependent children). Both total costs and the federal share for these programs have steadily increased, despite high prosperity and employment. There is a movement to obtain regular federal aid for general assistance as well as categorical programs, and it is general assistance which fluctuates most directly with the level of economic activity. If such proposals are adopted, they would greatly increase federal expenditures and administrative scope even under full employment.

IN THE EVENT OF A DEPRESSION

It is to be hoped that the nation will not again face an economic crisis such as that of the thirties, with widespread unemployment and acute distress. Nevertheless, the possibility must be faced. During that period, the federal administration obtained congressional approval for unprecedented welfare measures. A large group of powerful independent agencies were established for direct and work relief, including the Civil Works Administration, the Federal Emergency Relief Administration, the Public Works Administration, Civilian Conservation Corps, National Youth Administration and Works Progress Administration. These agencies accounted for a major share of federal expenditures in the thirties. While some of them continued in existence for several years after the economic emergency had subsided, nevertheless, as temporary agencies, they were eventually disbanded.

With a cabinet Department of Health, Education and Security, the logical place for the expansion of relief measures would be within that department. Functions that in the thirties were assigned to temporary agencies would probably go to the department; indeed, the department would likely have sufficient political strength to play a major part in initiating legislation to this effect. There is danger that a single cabinet department, combining extensive regular functions with a new F.E.R.A., W.P.A., N.Y.A. and C.C.C., might obtain such power and control over public funds as to constitute a real threat to democratic government and freedom of enterprise.

Then, too, incorporation of emergency functions in a permanent department may tend to have the effect of perpetuating such functions long after the reason for their establishment

TABLE 3.—Provisions of S. 140

Introduced by:	Fulbright, Democrat, Arkansas; Taft, Republican, Ohio
Date:	Jan. 10, 1917
Disposition:	Reported with amendment by Aiken, R., Vermont, by Committee on Expenditure in the Executive Departments, on June 6, 1917
Title:	"Health, Education, and Security Department Act of 1917": A bill to create an executive department of the government to be known as the Department of Health, Education and Security
Administrative heads:	Under direction of the Secretary of Health, Education and Security at \$15,000 a year (The secretary is to appoint advisory committees to consult on matters of policies and procedures) Under Secretary for Health at \$12,000 a year Under Secretary for Education at \$12,000 a year Under Secretary for Public Welfare at \$12,000 a year (One of these to act as secretary in case of absence or vacancy in the secretary's office)
Purpose of department:	"To promote the general welfare of the people of the United States by aiding and fostering progress . . . in the fields of health, education, public welfare and related services
Duties of department:	"1. Promote, foster and encourage the development . . . of services, facilities and activities in the fields of health, education, public welfare and related fields "2. Collect and analyze statistics and make studies, investigations and reports on conditions in those fields in the United States and other countries, and disseminate and make available information in those fields "3. Make reports and recommendations with respect to the most effective policies and methods for the promotion of health, education, public welfare and related services, including recommendations with respect to legislation and matters of administrative policy "4. Advise and cooperate with international organizations functioning in those fields "5. Administer such federal programs, including grants-in-aid, and such powers, functions and duties in those fields as are assigned to it or provided through this or subsequent legislative enactment"
Administrative system:	Creates the following bureaus, with designated transfers. Divisions of the department are to be, in order of descending ranking, bureaus, divisions, branches, sections and units Bureau of Health.—U. S. Public Health Service, Food and Drug Administration, Freedmen's Hospital and St. Elizabeths Hospital Bureau of Education.—U. S. Office of Education plus Howard University, American Printing House for the Blind and the Columbia Institution for Deaf Bureau of Public Welfare.—Social Security Administration Transfers existing personnel, equipment, appropriations, etc. of the foregoing agencies. In addition, the secretary is authorized to appoint a general counsel and to create such additional divisions, branches, etc., as he deems necessary
Grants-in-aid:	The secretary is directed to establish uniform standards and procedures relating to fiscal, personnel and other requirements for grants, and standards and procedures to enable state agencies receiving more than one grant to submit a single plan of operation and to be subject to a single fiscal and administrative review of its operation
Reports to Congress:	The secretary is required to prepare a report to Congress at the close of each fiscal year, giving an account of expenditures, describing the work done by the department, and making such recommendations as he deems necessary
Effective date:	Ninety days after date of enactment
Transfers of other agencies:	Director of the Bureau of the Budget is authorized and directed to study activities of other departments and agencies in the federal government and report to Congress on whether any of them should be transferred to the new department in the interest of economy and simplicity of administration

has disappeared. These possibilities may seem remote at present, but they merit careful consideration from both Congress and the public in weighing the cabinet proposal.

WHAT ABOUT THE FURTHER DEVELOPMENT OF FEDERAL AND STATE RELATIONSHIPS?

Of more immediate interest is the need for a clear definition of the division between federal, state and local responsibility for matters of health, education and public welfare. Expansion of social activities at all levels of government has been piec-

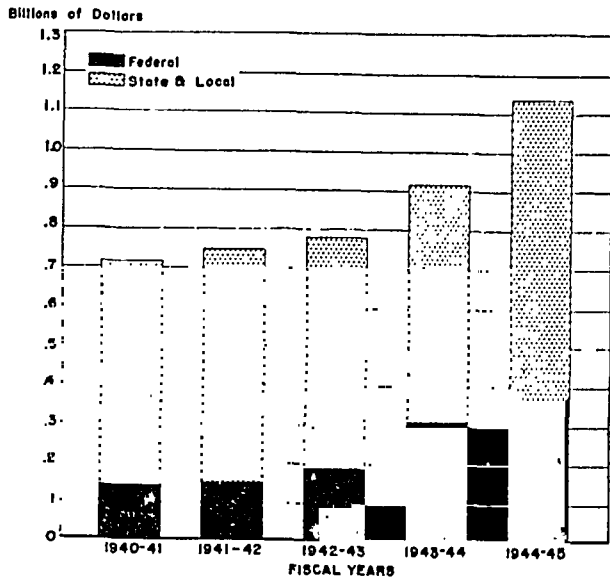


Chart 2.—Public expenditures for health and medical care services. Total public expenditures for health and medical care services increased 58.5 per cent from 1941 to 1945, while the federal share increased 167 per cent. Not included are health services incidental to other functions, such as public assistance, the Army, the Navy and education. Source: Social Security Yearbooks.

meal, in response to specific needs and demands. The line of demarcation between areas of responsibilities grows ever hazier. There are those who believe that these matters are and should be the responsibility only of states, individuals and communities. In contrast, others believe that local groups cannot be relied on to handle them and that the federal government alone should take over the task of providing health and social services. By way of compromise between these two extreme views, the grants-in-aid principle has been the means of extending federal participation (chart 4).

The effect of a cabinet department may be to hasten federal encroachment. The bill would not prevent such a development. Its only safeguard of local and voluntary interests is the

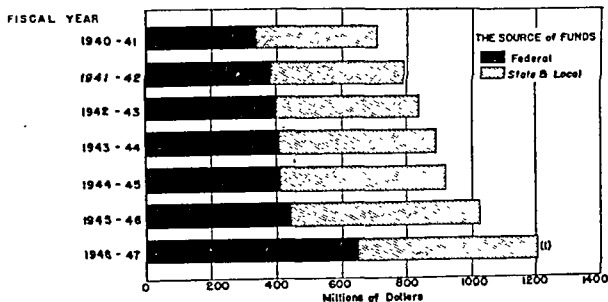


Chart 3.—Total costs for categorical aid programs of public assistance (old age assistance, aid to the blind and aid to dependent children). Total costs for these programs have risen 68 per cent in seven years, while the federal share has nearly doubled. Source: Social Security Administration. Includes benefits and administration. Column marked (1) excludes administrative costs paid from state sources; not yet available.

following sentence in the bill: “. . . Nothing in this Act shall be construed as conferring on any Federal officer or employee the right to exercise any supervision or control over the administration, personnel or operation of any State or local agencies, public or voluntary, in the fields of health, education,

public welfare or related services. . . .” This sentence, added by the Senate Committee on Expenditures in Executive Departments, replaced the original wording in the bill as introduced by Senators Fulbright and Taft:

“. . . The Department shall promote the general welfare of the people of the United States by aiding and fostering progress throughout the Nation in the fields of health, education, security, and related services contributing to individual, family and community well-being; and these objectives shall be carried out to the fullest possible extent through State and local agencies, public and voluntary, and in such manner as to preserve and protect to the highest possible degree the independence and autonomy of State and local agencies, public and voluntary, in education, health, security and related fields. . . .”

It is apparent that the amended version of the bill weakens the provision on behalf of local and voluntary interests in these fields. The bill does not require federal development or encouragement of local interests. If adopted in its present form, the effect of the bill (depending partly on federal administrative policy) may well make for discouragement of voluntary and local action.

Before action is taken on the cabinet proposal, it would appear that an essential first step would be discussion of the proper relationship between federal and state-local responsibility. This relationship should be clarified, and it is desirable

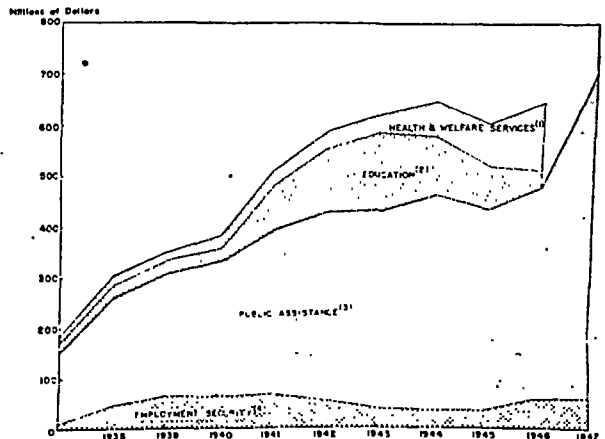


Chart 4.—Federal grants to states for health, education and security purposes by fiscal years ending June 30:

(1) Maternal and child health and welfare services, public health services, venereal disease and tuberculosis control, vocational rehabilitation, state and territorial homes for disabled soldiers and sailors, emergency maternity and infant care, and school-lunch program. 1947 data not yet available.

(2) Education of the blind, agriculture and mechanical arts colleges, marine schools, vocational education, training of war workers and services for farm labor, 1947 data not yet available.

(3) Old age assistance, aid to dependent children and aid to blind.

(4) Unemployment compensation administration; employment services through 1941.

Since 1943, there has been a decline in grants to states for education, due to the curtailment of defense training programs. Grants for employment security purposes have shown some fluctuation, but grants for public assistance and health and welfare services have steadily increased. In the last two years public assistance grants have risen more than 50 per cent, from \$421.2 millions in 1946 to \$644.1 millions in 1947. Source: Social Security Yearbook, 1945, and Social Security Bulletin, September 1947.

that such clarification should come at a period such as the present when there is no economic crisis bringing pressure on Congress for immediate federal expansion.

In conclusion, it is doubtful whether granting cabinet status to the Federal Security Agency has any real value other than a frankly political one. On the other hand, this proposal, of little apparent significance in the immediate future, may contain implications for the potential growth of the Department of Health, Education and Security of such magnitude as to merit careful consideration. Further study of all possibilities is necessary before Congress acts on S. 140.

Official Notes

RADIO PROGRAMS

The A.M.A.-N.B.C. radio program, "Doctors Today," which opened Dec. 13, 1947, is scheduled to run for twenty-six consecutive weeks at 3 p. m. each Saturday, Chicago time. The exact number of stations taking the program will be announced when available; the 1947 series "Doctors—Then and Now" was broadcast by approximately one hundred and forty stations coast to coast.

"Doctors Today" is a program based on timeliness and therefore subject to change. The following schedule is tentative. Announcement of changes will be made in THE JOURNAL whenever possible, but there may be times when the program broadcast will not coincide in subject or title with that previously announced.

Whenever possible programs canceled in favor of more timely ones will be broadcast later in the series.

Following is the schedule for programs now contemplated:

January 10, Care of the Chronically Ill.
January 17, Alcoholism.
January 24, Federal Control of Drugs
January 31, Urgent Need for Nurses.
February 7, Health in Rural Schools.

Washington Letter

(From a Special Correspondent)

Jan. 8, 1948.

Insanity Rate Higher in War Years

The U. S. Census Bureau reported that there was an increase in insanity among Americans during the war years, 1940 through 1945, especially among men in the military age bracket. The question was posed whether the "psychologic hazards of military life" drove more men insane or whether the intensive psychiatric scrutiny given men in this age group detected more cases of insanity. The increase in insanity among women paralleled that of men, but it was less in the 20 through 34 age group. The report covered the rise in the rate of first admissions of psychotic persons and it ignored hospital admissions of psychoneurotics and marginal disorders such as alcoholism, mental deficiency or drug addiction. The estimated number of first admissions to hospitals for permanent care of all patients with psychosis increased from 71.7 in each hundred thousand of population in 1940 to 86.8 in 1945, an increase of about 21 per cent. The number of men admitted to hospitals as psychotics was 78.8 per hundred thousand in 1940 as against 96.4 in 1945. Admissions more than doubled among men aged 20 to 24, rose 78 per cent among those aged 25 to 29 and rose 36 per cent among those aged 30 to 34.

Hawley Reports Veterans Administration May Lose Fourteen Hundred Doctors

Major Gen. Paul R. Hawley, former veterans' administrator, reported just prior to his retirement that the agency faces the loss of more than fourteen hundred physicians next spring, when terms of young officers trained in the wartime Army specialized training and V-12 programs expire. Many of the officers were assigned to isolated hospitals for which it was difficult to obtain civilian personnel, and many of them have expressed their intention to leave the agency on completion of the two year terms. The agency employs about sixty-seven hundred physicians in its hundred and twenty-six hospitals serving 118,000 patients.

Order to Curb Venereal Disease

Army Secretary Kenneth C. Royall has issued orders for a new drive to combat venereal disease among enlisted men. Officers and men who become infected are prohibited from leaving camp for thirty or even ninety days and are denied the right to visit their homes for at least thirty days after being cured; promo-

tions will be withheld for men with repeated infections; cooperation with civilian authorities in combating prostitution near military establishments and in sponsoring athletic and recreation programs will be encouraged.

Office of Scientific Research and Development Abolished

President Truman signed the executive order abolishing the wartime Office of Scientific Research and Development, the duties of which were absorbed by the unified armed services. Dr. Vannevar Bush, former head of the Office of Scientific Research and Development, is chairman of the new research and development board set up within the national military establishment under the unification act.

Federal Aid for Needy College Students Urged by Presidential Commission

The President's Commission on Higher Education advocates that \$135,000,000 be provided by the federal government to aid needy college students in 1948-1949. The expenditure was proposed as a starting point for federal assistance to equalize educational opportunity for deserving students throughout the nation.

Medical Legislation

MEDICAL BILLS IN CONGRESS

Admission of Mental Patients at Saint Elizabeths Hospital

Companion bills have been introduced to provide for the voluntary admission and treatment of mental patients at Saint Elizabeths Hospital, S. 1810, introduced, by request, by Senator Taft, Ohio, and H. R. 4552, introduced by Representative Buck, New York. The Superintendent of the Hospital would be authorized, with the approval of the Federal Security Administrator, to prescribe such regulations as he shall deem necessary to carry out the provisions of the legislation.

National Board of Medical Examiners

A pending bill, H. R. 4636, introduced by Representative Miller, Nebraska, proposes to amend the healing arts practice act of the District of Columbia so as to authorize the issuance of licenses, without examination, to applicants who hold certificates issued by the National Board of Medical Examiners.

Importation of X-Ray Film

A bill introduced by Representative Andresen, Minnesota, proposes to amend paragraph 1629 of the Tariff Act of 1930 so as to provide for the free importation of exposed x-ray film. The purpose of this legislation is apparently to permit patients who have received treatment abroad to bring in to this country free of any tariff roentgenograms which may have been taken in connection with such treatment.

Hospital Construction

Delegate Bartlett, Alaska, proposes by H. R. 4816 to amend the federal hospital survey and construction act so as to provide the minimum allotment of \$250,000 to each state for the construction of hospitals.

A bill introduced by Representative Fallon, Maryland, provides that the funds heretofore appropriated for the construction of a Veterans' Administration tuberculosis hospital in Baltimore shall be used for the construction in that city of a general medical and surgical hospital.

Coming Medical Meetings

Annual Congress on Medical Education and Licensure, Chicago, Palmer House, Feb. 9-10. Dr. Donald G. Anderson, 535 North Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Chicago, Palmer House, Feb. 6-7. Dr. F. S. Crockett, 535 N. Dearborn St., Chicago 10, Chairman.

American Academy of Orthopaedic Surgeons, Chicago, Palmer House, Jan. 24-29. Dr. Harold B. Boyd, 869 Madison Ave., Memphis, Tenn., Secretary.

American Society for Surgery of the Hand, Chicago, Jan. 23-24. Dr. Joseph H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

Southeastern Allergy Association, Richmond, Va., Jefferson Hotel, Jan. 17-18. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 49, S. C., Secretary.

GOVERNMENT SERVICES

ARMY

IMPROVEMENTS IN ADVANCED TRAINING FOR MEDICAL OFFICERS

The Surgeon General announced December 20 a number of changes in the Medical Department graduate education program for the coming year, based on nine months' operation of the program and surveys made by civilian medical experts. The innovations, effective immediately, are designed to maintain the quality of patient care and to elevate the caliber of training at Army general hospitals. The major changes are as follows:

Graduate training in psychiatry is being strengthened and concentrated in three general hospitals—Letterman (San Francisco), Fitzsimons (Denver) and Walter Reed (Washington, D. C.). This plan will afford each resident more individual instruction. Many qualified civilian consultants will be added to the attending staffs of the hospitals which are engaged in teaching. The administrative responsibilities of qualified teachers will be lessened by the transfer of routine paper work to administrative assistants assigned from the Medical Service Corps. Qualified instructor personnel will be kept on duty in their present assignments for as long as possible. When it becomes necessary to move them, they will be placed in locations where they will be able to teach.

Special instruction in the best methods of medical education is being provided for key military instructor personnel by means of short courses at selected civilian medical institutions. The number of conferences at which attendance by residents and interns is required is being reduced. Where possible, these will be held at times that will not interfere with bedside teaching. Likewise, the administrative duties of student officers are being reduced to the bare minimum consistent with excellent care of patients under their supervision. More adequate means of resident-intern selection and evaluation of progress are being placed in operation. Personal interviews will receive special emphasis. The present obstacles in the organization of interns and residents into the accepted pyramidal system are being overcome, so that the student officers may be given increased responsibility in care of patients, teaching and the supervision of others as they progress from one year of training to the next.

The Surgeon General pointed out that the improvements are a part of a continuing effort to place Army teaching hospitals on an equal plane with the best civilian teaching hospitals. He reported that the internists, surgeons and psychiatrists who surveyed nine Army general hospitals found that professional training compares favorably, for the most part, with the residency training given at civilian teaching centers with which they are familiar.

At present two hundred and four officers of the Regular Army Medical Corps are participating in the postgraduate instruction program as residents. The objective of each is certification as a diplomate by one of the specialty boards. In addition, fifty positions were made available on January 1 to applicants for the Regular Army who are now in the continental United States, and fifty more will be offered to applicants who are overseas effective July 1. The Surgeon General will furnish further information to interested doctors.

Of the one hundred and six applicants who have been approved thus far for internships beginning July 1, thirteen had a scholastic standing among the first ten of their class. Thirty others stood in the first third of the respective classes, and fifty-eight were in the middle third.

The hundreds of Army physicians who will receive internship and residency training this year and next, with some of the nation's leading specialists as well as war-seasoned military medical personnel as their instructors, constitute a group separate and distinct from others receiving special courses in civilian hospitals and schools.

GENERALS NOMINATED FOR PROMOTION

The Army's First Selection Board under the new Officer Personnel Act has submitted to President Truman the names of seventy-six officers for promotion to the grade of permanent major general and ninety-two for promotion to permanent brigadier general in the Regular Army. The President has approved the list and sent it to the Senate for confirmation. In the medical corps the following five were recommended for confirmation to major general: George C. Beach Jr., Raymond W. Bliss, Malcolm C. Grow, Albert W. Kenner and John M. Willis; the five recommended for permanent promotion to brigadier general are James A. Betha, Guy B. Denit, Joseph I. Martin, Edward A. Noyes and Omar H. Quade.

AFFILIATED UNITS OF THE MEDICAL DEPARTMENT

Eleven medical schools and hospitals to date have signed agreements with the Department of the Army to sponsor affiliated units of the Medical Department, thus becoming integral members of the organized Reserve. In making the announcement Major Gen. Raymond W. Bliss, the Surgeon General, expressed gratification with the response, adding that he confidently expects many more institutions to join in coming months.

Medical Schools of the Universities of Texas, Illinois, Wisconsin, Marquette, Ohio State, Duke and Baylor have completed negotiations to sponsor affiliated units, as have the following hospitals: Mount Sinai (New York), Cook County (Chicago), Rochester General (Rochester, N. Y.) and Boston City Hospital (Mass.).

The affiliated unit inaugurated by the Army in World War I proved to be an invaluable asset in World War II, when some five hundred affiliated units—not only medical but signal, railroad, engineering and numerous other types—saw service in all theaters of operations.

MEETING OF MEDICAL OFFICERS IN KOREA

At the regular monthly meeting of U. S. Army medical officers stationed in Korea at the 34th General Hospital, Dec. 17, 1947, among those present were Col. G. N. Schuhmann, M. C., U. S. A., and Col. R. E. Blount, M. C., U. S. A., who were visiting Korea as consultants in preventive medicine and medicine, respectively. The following papers were presented: "The Action of Anesthetics on Respiration" by Capt. Clara A. Vezina, A. N. C., discussed by Lieut. Kay Shaffer, A. N. C.; "Functional Illness" by Capt. Raymond C. Perkins, M. C., discussed by Colonel Blount and Capt. Irving Schulman, and "Preparation of Hospital Records" by Capt. Charles A. Cubbler, S. C. Dr. Philip Jaisohn, a Korean patriot who addressed the November meeting, spoke on "Adventures in Recent Korean History." Dr. Jaisohn is 81 years of age; he is now acting as special advisor to Lieut. Gen. John R. Hodge, commanding general, U. S. Army Forces in Korea. There were also ward rounds and departmental conferences. The hospital registrars in Korea were especially invited to attend this meeting. The chairman was Lieut. Col. John J. Marren, commandant of the 34th General Hospital. The business meeting was in charge of Col. Charles P. Ward, M. C., surgeon, 24th Corps.

PERSONAL

Dr. Henry M. Thomas, colonel, M. C., reserves, of Baltimore, has been placed on active duty for a period of five weeks, as medical adviser to Major Gen. Willard S. Paul, director of Personnel and Administration (G-1) Department of the Army.

NAVY

GROUP TO STUDY CHOLERA EPIDEMIC IN SYRIA

The Medical Department of the Navy is sending four specialists to Syria to study the cholera epidemic in Damascus and other parts of Syria. Emphasis will be placed on preventive and epidemic control measures. The party will consist of Lieuts. (jg) Richard H. Weaver (MC), U. S. N. R., of Kalamazoo, Mich., and Moulton K. Johnson (MC), U. S. N. R., of Washington, D. C.; Chief Pharmacist Mate James D. Gillmore, U. S. N., of Mount Vernon, Wash., and Pharmacist Mate, first class, Charles F. Robinson, U. S. N., of Corpus Christi, Texas. The group is now on duty at Naval Medical Research Unit 3 in Cairo, Egypt. Each member of the Syrian party is an expert in the prevention and control of cholera, and each participated in the recent naval medical program which assisted the Egyptian government to curb the cholera epidemic in Egypt.

MEETING OF HONORARY CONSULTANTS

The Honorary Civilian Consultants to the Medical Department of the Navy met December 5 in Washington, D. C. The consultants, who are appointed by the Secretary of the Navy, act as an advisory board to assist in formulating policies for the Bureau of Medicine and Surgery. The welcoming address was made by the Under Secretary of the Navy, the Honorable W. John Kenney. The Surgeon General, Rear Admiral Clifford A. Swanson (MC), opened the meeting with a discussion of the problems facing the Medical Department for the coming year and was followed by Rear Admiral H. Lamont Pugh (MC), Deputy Surgeon General, who spoke on the Bureau's organization. The consultants were: Dr. Edward L. Bortz, President, American Medical Association, Philadelphia; Dr. Roscoe L. Sensenich, President-Elect, American Medical Association, South Bend, Ind.; Dr. Joseph L. Appleton, Philadelphia; Dr. Richard R. Cattell, Boston; Dr. Robert P. Fischelis, Washington, D. C.; Dr. Evarts A. Graham, St. Louis; Dr. Frank H. Lahey, Boston; Dr. Oswald S. Lowsley, New York; Rev. Paul McNally, Washington, D. C.; Dr. Clyde E. Minges, Rocky Mountain, N. C.;

Dr. James Edgar Paullin, Atlanta, Ga.; Dr. Charles Sheard, Rochester, Minn.; Dr. W. Calhoun Stirling, Washington, D. C.; Dr. Edward A. Strecker, Philadelphia, and Dr. Meyer Wiener, Coronado, Calif.

APPOINTMENT OF COMMISSIONED OFFICERS IN THE REGULAR NAVY

The Army-Navy-Public Health Service Medical Officer Procurement Act of 1947 makes it possible now for civilian doctors to become commissioned officers in the regular Navy, provided they meet the professional and physical qualifications. This law is unique in that it does away, for the first time, with the age limitation of 32 years and permits doctors in civilian practice to enter the Navy and be commissioned with the rank up to and including captain. The law considers all strata of the medical profession, interns, residents, reserves, former medical officers who have resigned and presently practicing physicians.

To make application a physician must be a citizen of the United States, a graduate from a class A medical school and must have served at least one year's internship in an approved hospital. Candidates will then be judged on a number of qualifications such as being a member of a specialty board, teaching connections, the number of years of professional or scientific practice, hospital or laboratory connections and a statement of military service.

The allocation of rank to successful candidates will depend on their academic age, professional standing and experience in the medical field. Successful candidates will then be integrated in line with medical officers of the regular Navy and assigned running mates accordingly. This means that they will be eligible for promotion along with their fellow officers of equal rank.

This law offers an opportunity for civilian doctors to make a career in the regular Navy and to enjoy its professional advantages as well as its retirement benefits. Doctors interested in such a career should write to the Bureau of Naval Personnel, via the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

PUBLIC HEALTH SERVICE

GRANTS FOR TRAINING AND RESEARCH IN PSYCHIATRY AND PSYCHOLOGY

Applications for training and research grants in psychiatry, clinical psychology, psychiatric social work and psychiatric nursing in connection with the program of the U. S. Public Health Service authorized under the Mental Health Act for the fiscal year beginning July 1, 1948 should be received not later than January 15. Final action will be taken on these applications at the next meeting of the National Advisory Mental Health Council in Washington, D. C., May 14-15. Applications for training grants should be sent to the Training and Standards Section and applications for research grants to Research Projects Director, Mental Hygiene Division, U. S. Public Health Service, Washington, D. C.

GRADUATE INSTITUTE IN KENTUCKY ON PSYCHOSOMATIC MEDICINE

The Mental Hygiene Division of the U. S. Public Health Service, in cooperation with the Kentucky State Medical Association, Kentucky Psychiatric Association and Kentucky Department of Health, is holding a postgraduate institute in psychosomatic medicine and mental hygiene at Lexington, Ky., February 3 to 6. Physicians in Kentucky and adjoining states are invited. There is no registration fee. The speakers will include authorities from various states. Among the presentations will be a symposium on drug addiction and another on infant and child behavior, papers on diagnosis and care of epilepsy, psychologic aspects of rheumatoid arthritis, psychic factors in cardiovascular diseases, and the court psychiatrist's view of

crimes. On Friday at a joint meeting with the Kentucky Psychiatric Association there will be papers on early schizophrenia and schizoid personality, and psychotherapy for practitioners.

The U. S. Public Health Service is using funds from the appropriation provided by the mental health program for the institute, and if it is well received by physicians similar institutes will be held elsewhere. Those desiring to attend should write direct to the hotels for reservations, mentioning the institute. Blocks of rooms have been reserved in the Lafayette and Phoenix hotels; other hotels in Lexington are the Drake and the Kentuckian.

RECLASSIFY OCCUPATIONAL THERAPISTS

Professional standards for all occupational therapists in the U. S. Public Health Service have been authorized, according to federal security administrator Oscar F. Ewing. Occupational therapists in hospitals operated by the service will be reclassified from subprofessional to professional grades P1, P2 or P3, if they are graduates of approved schools of occupational therapy, or have experience giving them comparable qualifications, and are performing professional occupational therapy.

Unlike the physical therapist category, which also was recently converted to professional status, the subprofessional status for occupational therapists will not be eliminated. Occupational therapy aides still will be needed in the subprofessional grades. Qualified occupational therapists of the U. S. Public Health Service will not be converted from subprofessional to professional status immediately. Individual job descriptions must first be prepared by the incumbents and reviewed by the Classification Section in order to determine the appropriate professional grade.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Dr. Houssay Delivers Hitchcock Lectures.—Dr. Bernardo A. Houssay of Buenos Aires delivered the Hitchcock Lectures at the University of California, Berkeley, beginning January 8. The lectures, presented periodically under the Hitchcock Foundation, are open to the public. In his lectures Dr. Houssay, who is director of the Institute of Biology and Experimental Medicine in Buenos Aires, partially covered the work for which he, as co-winner, was awarded the Nobel Prize in Medicine in 1947.

Disease Prevention Week in Los Angeles.—The fourth observance of Disease Prevention Week is set for February 15-22 in Los Angeles. The Community Health Association of Los Angeles will conduct the activity in cooperation with the city and county health departments, the county medical association and its Women's Auxiliary, and numerous social and welfare agencies. The public will be invited to sessions that will run all day Wednesday, February 18, in the Biltmore Hotel, Los Angeles. Health exhibits will be displayed in the morning, a luncheon with distinguished speakers will be given at noon, and papers by health authorities will be delivered during the remainder of the day.

Society News.—Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, will address the regular monthly meeting of the Alameda County Medical Association January 15 in the Scottish Rite Temple in Oakland at 8:15 p.m. on "The Present Status of Medical Legislation." The meeting is open to the members of the Bay area medical associations. Dr. Fishbein will also address the Oakland Rotary Club at its noontime meeting January 15 on "Innovations and Scientific Progress in Medicine."—The Los Angeles Society of Allergy, a section of the Los Angeles County Medical Association, has elected the following officers for 1948: Drs. Willard S. Small, Pasadena, president, and Frank G. Crandall Jr., Los Angeles, secretary-treasurer.—The Trudeau Society of Los Angeles at its meeting December 23 elected Dr. Joseph L. Robinson president and Dr. Arthur E. T. Rogers, secretary-treasurer.—The Los Angeles County Medical Association on Dec. 4, 1947 elected Dr. William H. Leake president, and Dr. Richard O. Bullis, secretary-treasurer. They took office January 1.

Dr. Stanley to Head Laboratory for Virus Research.—Wendell M. Stanley, Ph.D., of the Rockefeller Institute for Medical Research, Princeton, N. J., has been appointed to establish and direct a new laboratory of virus research at the University of California, Berkeley-San Francisco. Dr. Stanley will come to Berkeley in July. He will not only direct biochemical research on the Berkeley campus and at the medical school in San Francisco but also cooperate closely with the state program of the College of Agriculture in the same field. Dr. Stanley received his Ph.D. degree from the University of Illinois in 1927. He was a National Research Fellow in Munich, Germany, 1930-1931, and has been with the Rockefeller Institute for Medical Research since 1931 and a member since 1940. He was the Hitchcock professor at the University of California in 1941. In 1946 Dr. Stanley and John H. Northrop, Ph.D., were awarded one half of the Nobel Prize in Chemistry for their research on virus proteins (THE JOURNAL, Jan. 18, 1947, p. 191). Dr. Stanley also received the American Association for the Advancement of Science Prize in 1936, the Isaac Adler Prize by the Medical School of Harvard in 1938 and the Rosenberger Medal by the University of Chicago in 1938.

GEORGIA

Postgraduate Assembly in Atlanta.—The Fulton County Medical Society is sponsoring the Atlanta Postgraduate Medical Assembly at the Academy of Medicine, Atlanta, January 28-30. The speakers will be Drs. Lester Dragstedt, Chicago; Chester S. Keefe, Boston; Andrew C. Ivy, Chicago; Helen B. Taussig, Baltimore; Julius Lempert, New York; Philip S. Hench, Rochester, Minn.; Emmerich von Haam, Columbus, Ohio; Ralph M. Towell, Hartford, Conn.; Robert Elman, St. Louis; Tom D. Spies, Birmingham, Ala.; Merrill C. Sosman, Boston; Rufus F. Payne, Rome, and Robert B. Greenblatt, Augusta.

ILLINOIS

Personal.—Dr. Harry D. Nesmith of Salem has been appointed as surgeon for the Baltimore and Ohio Railway, a position for which he resigned after holding the position about thirty years. A. Cunningham,

Dr. Cheney Retires from Armour and Company.—After thirty-two years' service Dr. Volney S. Cheney, Chicago, retired Oct. 4, 1947 as medical director for Armour and Company and has been succeeded by Dr. Joseph A. Hubata, Chicago. Dr. Cheney, a graduate of Northwestern University Medical School, 1902, was surgeon for the company from 1916 to 1920, when he became medical director. He has retired and moved to Las Vegas, N. Mex. Dr. Hubata before his appointment served for nine years on the medical staff of the West Pullman Works of the International Harvester Company. He is a graduate of the University of Illinois School of Medicine, 1933.

County Society Honors Veteran Member.—Dr. John M. Palmer, Waukegan, was guest of honor at a recent testimonial dinner in Waukegan, sponsored by the Lake County Medical Society. The occasion marked the retirement of Dr. Palmer, who has spent his entire medical career of forty-six years in Lake County. Among the speakers was Dr. John B. Youmans, dean of the University of Illinois Medical School, Chicago, from which Dr. Palmer graduated in 1901. Dr. Palmer served in the Army medical corps in World War I and located in Waukegan when he returned to civilian life. He is a staff member of Victory Memorial and St. Therese hospitals in Waukegan.

Chicago

The First Holmes Lecture.—At a joint meeting of the Institute of Medicine, the Chicago Ophthalmological Society and the Society of Medical History of Chicago at the Palmer House, January 30, Dr. Edward V. L. Brown, Rush clinical professor emeritus of ophthalmology, University of Illinois College of Medicine, will deliver the first lecture under the Rudolph Wieser Holmes and Maria Baxter Holmes Fund. His subject will be "Edward L. Holmes: Pioneer Chicago Eye Doctor."

The Chicago Industrial Health Plan.—An educational program to raise the standards of industrial health and medicine among 1,500,000 workers in Cook County was launched January 1. The Chicago Industrial Health Plan is supported by community groups, health agencies, major labor unions, management groups and welfare associations. Mr. Lester M. Selif, president of the General American Transportation Company, is general chairman; Dr. Frederick W. Slobe, chairman of the Chicago Medical Society's committee on industrial medicine, is chairman of the executive committee, and Alexander Ropchan, executive secretary, health division, Council of Social Agencies, is secretary. Labor organizations are to name a co-chairman. A full time executive director, Percy Shostac, New York, who directed a similar program for Brooklyn, has been appointed. The plan is financed by the state, the Red Cross, the Tuberculosis Institute and the American Cancer Society. It is said that the program will endeavor to carry out recommendations made by the U. S. Public Health Service in its Chicago-Cook County Health Survey. It is hoped that industries will contribute to the educational program.

INDIANA

Hygeia Sent to Legislators.—The House of Delegates of the Indiana State Medical Association has presented members of the Indiana General Assembly with a year's subscription to *Hygeia*, the *Health Magazine*, published by the American Medical Association.

State Society to Award Keys.—The council of the Indiana State Medical Association has voted to present gold keys to the three seniors of the 1948 graduating class of the Indiana University School of Medicine, Bloomington-Indianapolis, who make the highest grades. The scholarship awards will be presented at commencement exercises next June.

Congressman Harness to Address Secretaries' Conference.—Congressman Forest A. Harness of Kokomo, representing the Fifth Indiana District, will be principal speaker at the annual Secretaries' Conference of the state medical association in Indianapolis on February 15. Head of a house committee investigating lobbying activities of federal employees, he will reveal strategy of the employees who are trying to influence Congress to pass legislation for socialized medicine. Other speakers will be Dr. Elmer L. Henderson of Louisville, Ky., chairman of the American Medical Association Board of Trustees, and Dr. Richard L. Meiling of Columbus, Ohio, secretary of the American Medical Association Council on National Emergency Medical Service. Dr. Albert M. Mitchell, Terre Haute, chairman of the conference committee, will preside.

LOUISIANA

Society News.—The Rapides Parish Medical Society will celebrate founders' day January 10 at the Bentley Hotel, Alexandria, with scientific papers beginning at 10 a. m., luncheon at 12:15 p. m. and an afternoon session ending at 4:30. Specialists and teachers on the staffs of Louisiana State University and Tulane medical faculties will address the group. In the evening following the annual banquet there will be an address by a guest speaker.

Matas Lectureship Established.—The Beta Iota Chapter (Tulane) of Nu Sigma Nu Medical Fraternity is inaugurating an annual lectureship in honor of its most famous member, Dr. Rudolph Matas, professor emeritus of surgery at Tulane University of Louisiana School of Medicine, New Orleans. The first lecture will be held on January 28 at 8 p.m. in the Hutchinson Memorial Auditorium of the Tulane Medical School. Dr. Alfred Blalock, professor of surgery at Johns Hopkins Medical School, Baltimore, the inaugural speaker, will lecture on "Surgical Treatment of Congenital Cardiovascular Defects." All members of the medical profession are cordially invited.

MICHIGAN

Hospital Staff Honors Dr. Wilson.—The medical and surgical staff of St. Mary's Hospital, Detroit, gave a testimonial dinner Dec. 3, 1947, for Dr. Walter J. Wilson at the Detroit Athletic Club in honor of his fifty years of practice. He was presented a plaque recording the history of his career. Dr. Wilson, a graduate of the Detroit College of Medicine, 1897, is a past president of the hospital's medical staff and a member of its executive staff.

NEW YORK

Nassau County Postgraduate Instruction.—Postgraduate instruction arranged by the Medical Society of the State of New York in cooperation with the New York State Department of Health for the Nassau County Medical Society will be given Tuesday afternoons at 4 o'clock in the Nassau Hospital auditorium, Mineola, as follows:

January 20, Dr. Lewis D. Stevenson, New York, Clinical Aspects of Encephalitis and Poliomyelitis.

January 27, Dr. Harry Most, New York, Tropical Disease, Civilian Implications of Military Experience.

February 3, Dr. Edward F. Hartung, New York, Diagnosis and Treatment of Low Back Pain from the General Practitioner's Point of View.

February 10, Dr. E. Charles Kunkle, New York, Headache Mechanisms.

Training Center in the Field of Atomic Energy.—According to the *Army and Navy Journal*, the U. S. Atomic Energy Commission has approved an expenditure of \$615,000 to build and equip a six story training and research center on the campus of the University of Rochester. This project was recommended by the commission's Advisory Committee on Biology and Medicine to provide facilities for training medical personnel to meet problems in the field of atomic energy. Under the program physicians will receive graduate training in the use of radioactive isotopes for tracer studies and therapy and in the treatment of radiation sickness; they will be instructed in the pharmacology and toxicology of radioactive materials, the design of radioactive chemical laboratories, principles of shielding, methods of decontamination and the disposal of radioactive waste materials.

New York City

Lectures for Laymen.—The New York Academy, continuing its series of Lectures to the Laity, will present the following program in 1948 at the Academy at 8:30 p.m.:

January 22, Dr. Edward J. Stieglitz, Washington, D. C., On Being Old Too Young.

February 4, Dr. Cornelius P. Rhoads, New York, Perspectives in Cancer Research.

February 26, Dr. William C. Menninger, Topeka, Kan., Psychiatry for Everyday Needs, the George R. Siedenburg Memorial Lecture.

March 11, James B. Conant, Ph.D., president, Harvard University, Cambridge, Mass., The Interrelation of Pure and Applied Science in the Field of Medicine.

Friday Afternoon Lectures.—The January and February program of the New York Academy of Medicine's Friday Afternoon Lectures, given at the Academy at 4:30 and open to members of the medical profession and medical students, is as follows:

January 16, Dr. Richard H. Freyberg, Diagnosis and Treatment of Arthritis.

January 23, Dr. Murray H. Bass, Recent Advances in Knowledge of Contagious Diseases of Childhood.

January 30, Dr. Paul Reznikoff, Diagnosis and Treatment of Anemia.

February 6, Dr. Thomas A. C. Rennie, Use and Abuse of Psychotherapy.

February 13, Dr. George M. Lewis, What's New in Dermatology?

February 27, Dr. Carl A. L. Binger, Management of the Emotional Side of Heart Disease.

Experiment in Cardiac Rehabilitation.—The Altro Work Shops, Inc., established thirty-two years ago under the direction of Mr. Edward Hochhauser and his associate Miss Celia Hentell for the rehabilitation of the tuberculous, has undertaken a two year experiment in the field of cardiac rehabilitation of the tuberculous. The facilities of Altro have been offered only to the quiescent or arrested tuberculous patient, for whom it helps to bridge the gap between hospital care and complete social integration. Case histories, including medical, industrial and social work data, together with other factors in the program will be evaluated at the end of the two year experimental period to determine the future content of the program. Minimum admission requirements have been set up. For the initial stage of the program only 20 patients will be admitted to facilitate the study of their progress. Inquiries and applications should be addressed, with the medical abstracts, to Altro Work Shops, Inc., 71 West Forty-Seventh Street, New York.

OHIO

University Establishes Eye Laboratory.—The ophthalmology department of the University of Cincinnati College of Medicine is establishing an eye laboratory under the direction of Dr. Donald J. Lyle, professor and head of the department. The work of the laboratory currently is concerned with the examination of eyes for diagnosis and the preparation of specimens for collection and study. Facilities and services of the laboratory will be available to physicians in Ohio, Indiana and Kentucky. The laboratory has taken over temporary quarters in Pavilion A of the Cincinnati General Hospital and is awaiting assignment to permanent quarters there. The first gift to support the laboratory has been made by the Eastern Hills Lions Club.

PENNSYLVANIA

Typhoid Following Wedding Reception.—Fifteen persons among seventy-six who attended a wedding reception near Lititz in Lancaster County on Thanksgiving Day became ill with typhoid, according to the Associated Press. All doctors in the county have been notified of the outbreak.

Seibert Memorial Award.—Dr. Charles W. Smith, Harrisburg, received the Seibert Memorial Award, having been an adjudged member of the Harrisburg Academy of Medicine under 45 years of age, who has done the most to advance medicine in the last two years. Dr. Smith, a former editor of the *Academician*, official publication of the Academy, is chairman of the committee on graduate education of the Medical Society of the State of Pennsylvania, which this year is conducting a graduate education institute in six centers throughout the state. Presentation of \$500 for postgraduate medical study, made possible by a trust fund created in memory of Dr. William H. Seibert, was made at a dinner meeting in the Penn-Harris Hotel, Harrisburg, at the close of the academy's sixteenth annual postgraduate assembly.

Pittsburgh

Huggins Memorial Lecture.—The second annual R. R. Huggins Memorial Lecture of the University of Pittsburgh School of Medicine will be given at 8:30 Friday evening, January 16, at the Mellon Institute Auditorium. The guest lecturer will be Dr. Joseph G. Hamilton of the University of California's Radiation Laboratory, speaking on "Application of Radioactive Substances to Clinical Medicine." The lecture is sponsored by the Phi Delta Epsilon Fraternity, Nu Chapter, and all interested are invited to attend.

TEXAS

Memorial Physiology Professorship.—Through contributions to Baylor University College of Medicine Alumni-Faculty Foundation and by faculty members and other friends, an endowment is being established for a professorship of physiology as a memorial to Dr. Benjamin F. Hambleton, a member of the faculty for twenty-seven years. The professorship will become effective at the beginning of the academic year 1948-1949. Dr. Hambleton was graduated from Ohio Wesleyan University Medical Department, Cleveland, and joined the department of physiology, where he served from 1901 to 1910. He was professor of physiology and pharmacology at Vanderbilt University from 1910 to 1919 and came to Baylor University College of Medicine, Dallas, in 1920 as professor of pharmacology and biochemistry. In 1930 he was appointed professor of physiology and pharmacology, continuing active until his sudden death Dec. 9, 1947, at the age of 75.

GENERAL

Meeting of Spanish Speaking Physicians.—The International Spanish Speaking Association of Physicians, Dentists and Pharmacists, Inc., will meet at the Waldorf-Astoria Hotel, New York, January 23, under the presidency of Dr. Jacob M. Gershberg, New York. Included on the program is a symposium on blood from the points of view of geriatrics, race, life, diseases and crime.

Southeastern Allergy Association.—The third annual meeting of the Southeastern Allergy Association will be held January 17-18 at the Jefferson Hotel, Richmond, Va., under the presidency of Dr. J. Warrick Thomas of Richmond. The program for Saturday includes panel discussions of nose and throat allergies, atopic dermatitis, the effectiveness of influenzal and rickettsial vaccines, and sudden death during skin testing. Guest speakers will be Dr. Karl D. Figley, Detroit, president, American Academy of Allergy, on "Some Unanswered Questions in Clinical Allergy" and Dr. Hal M. Davison, Atlanta, Ga., president, American College of Allergists, on "Allergy and Nutrition." Sunday's program includes a panel discussion and papers on periarthritis nodosa, sensitivity to alcoholic beverages and ascaris asthma.

National Conference on Medical Service.—A National Conference on Medical Service will be held at the Palmer House, Chicago, February 8 beginning at 9 a.m. under the presidency of Dr. Creighton Barker, New Haven, Conn. Subjects under discussion include two points of view on "The Practice of Medicine in Hospitals, Health Departments and Medical Schools," "Medical Public Relations Begin in the Doctor's Office," and "The Nursing Problem in America" in its educational, service and economic aspects. The luncheon speaker will be Robert Hutchins, chancellor, University of Chicago, speaking on "Are Medical Educational Requirements Too High—Should We Have More Doctors?" On the afternoon program are two panel discussions, one on General Practice and another on Specialty Boards.

Gastroenterologic Contest and Award.—The National Gastroenterological Association announces its Annual Cash Prize Awards Contest for 1948 for the best unpublished contribution to gastroenterology. Contestants residing in the United States must be members of the American Medical Association, and those in foreign countries must be members of a similar organization in their own country. The winner will be selected by a board of impartial judges, and the award of \$100 and a Certificate of Merit will be made at the annual banquet of the National Gastroenterological Association in June, 1948. The association reserves the exclusive rights to publish the winning contribution and those receiving certificates of merit in its official publication. Entries should be limited to 5,000 words, typewritten in English and submitted in five copies. They must be received not later than April 1, 1948 by the National Gastroenterological Association, 1819 Broadway, New York 23.

Research Fellowships in Medicine.—The American College of Physicians has awarded six Research Fellowships in Medicine for the year beginning July 1948 with stipends ranging from \$2,200 to \$3,200. Recipients and their fields of research are: Drs. Charles G. Campbell, Montreal, Canada, for studies of the basic physiology of certain cardiovascular problems, at McGill University Faculty of Medicine, Montreal; Frank H. Gardner, Boston, the mechanism and clinical application of the osmotic fragility test, at Thorndike Memorial Laboratory; Samuel P. Martin, Durham, N. C., bacterial metabolism, in the Rockefeller Institute for Medical Research, New York; Peritz Scheinberg, Miami, Fla., cerebral circulation and peripheral vascular flow in normal and hypertensive persons, in Duke Hospital, Durham, N. C.; Lutfu L. Uzman, Istanbul, Turkey, isolation and characterization of brain proteins and their role in health, disease and senescence, at McLean Hospital, Waverley, Mass.; John M. Weller, Hines, Ill., ionic patterns of the intracellular fluids and their influence on enzymatic reactions, at Harvard Medical School, Boston.

National Research Council Grants in Endocrinology.—The Committee on Research in Endocrinology, National Research Council, announces that requests for grants-in-aid during the fiscal year July 1, 1948 to June 30, 1949 will be received until Feb. 29, 1948. Application blanks may be obtained by addressing the Secretary, Division of Medical Sciences, National Research Council, 2101 Constitution Avenue, Washington 25, D. C. In addition to a statement of the problem and research program, the committee desires information regarding the proposed method of attack, the institutional support of the investigation and the uses to be made of the sum requested. No part of any grant may be used by the recipient for administrative expenses. The committee makes grants in aid of research in the

general field of experimental and clinical endocrinology. However, applications for support of research in the problems of sex in the narrower sense cannot be given favorable consideration, and investigators who seek support in this field should direct their proposals to the Committee for Research in Problems of Sex, National Research Council.

Annual Meeting of Orthopaedic Surgeons.—The American Academy of Orthopaedic Surgeons will hold its fifteenth annual meeting January 24-29 at the Palmer House, Chicago, under the presidency of Dr. Rexford L. Diveley, Kansas City, Mo. Among others, four distinguished foreign guests will speak: Dr. H. Osmond-Clarke, London, England, "Fractures of the Carpal Scaphoid"; Dr. Sten Friberg, Stockholm, Sweden, "The Problem of the Lumbar Intervertebral Disk—Some Pathologic and Clinical Aspects"; Professor Jacques Leveuf, Paris, France, "Treatment of the 'True' Congenital Luxation of the Hip. Results of the 'Open Reduction'," and Dr. Robert M. D'Aubigne, Paris, "Surgical Treatment of Nonunion of Long Bones." Numerous members of the academy and their guests will present thirty papers. On the Tuesday morning program is a symposium on Orthopedic Rehabilitation. A series of thirty-five instructional courses will be given beginning Sunday at 2 p.m. Seminars and cadaver demonstrations in anatomy have been added this year. The Audiovisual Program opens at 2 p.m. Saturday. There will also be scientific and technical exhibits. The annual dinner and dance will be Wednesday evening at 7:30.

FOREIGN

Postgraduate Summer School.—A Postgraduate Summer School will be held at the Medical School of the University of Birmingham, Birmingham, England, from July 10 to August 7, presenting courses on the physiology of sex hormones, fat absorption in experimental animals and man, and lipoprotein association in biologic systems. The school is intended for graduates who have done advanced work in the appropriate fields of science and medicine; it is open to men and women. The fee is £44 for board, residence and tuition. Applications from American students should be sent to the Director, Institute of International Education, 2 West 45th Street, New York 19, by March 15, 1948. The envelope should be marked "Birmingham University Medical Summer School."

Traveling Fellows from India.—Dr. Natesaier Purshotan, a pediatrician, and his wife Tara Deodhar Purshotan, a biochemist, of India are traveling throughout the United States on six months' fellowships from the United Nations, to observe particularly our methods of organizing public nutrition programs. Dr. Purshotan's ambition is to organize school lunchrooms based on American models throughout India, as only two cities in his country have school lunch programs at present. The new Indian government has established a Ministry of Health, and one of its first objectives will be better health for children, most of whom now are undernourished. The Purshotans recently visited the U. S. Public Health Service headquarters in Washington, D. C., where they were particularly interested in the nutrition surveys which that agency is conducting in communities in four areas of the United States and which are designed for the dual purpose of collecting data on the prevalence of deficiency disease and demonstrating methods for using the recent developments in the science of nutrition to prevent illness.

Marriages

HENRY CARL MESSERSCHMIDT JR., Richmond, Va., to Miss Betty Rowland Fidler of Burlington, N. C., Nov. 15, 1947.

JAMES WARREN VIDEMAN JR., Manning, S. C., to Miss Lillian Heyward Evans of Raleigh, N. C., Oct. 25, 1947.

JOHN J. HANLON JR., Harrisburg, Pa., to Miss Doris Marie Patrick of New Cumberland, Nov. 8, 1947.

FREDERIC PRATT HERTER, Boston, to Miss Harriet Ames Conel of Newton, Mass., Nov. 22, 1947.

JOSEPH L. STECHER, Baltimore, to Miss Hazel Heinmiller of Orlando, Fla., Oct. 18, 1947.

MILTON HAMLIN BLAND to Miss Joyce Elaine Gagner, both of Norfolk, Va., Oct. 25, 1947.

CHESTER CASSEL, Miami, Fla., to Miss Carol Isaacson of New York, Dec. 19, 1947.

EMANUEL CHUSID to Miss Alta Butkus, both of Chicago, Dec. 13, 1947.

Deaths

Frederic Ewald Sondern * New York; born in Stuttgart, Germany, March 30, 1867; College of Physicians and Surgeons, medical department of Columbia College, New York, 1889; an Affiliate Fellow of the American Medical Association, serving as a member of the House of Delegates from 1916 to 1921 and from 1932 to 1942; past president and formerly treasurer of the Medical Society of the State of New York; past president of the Medical Society of the County of New York; emeritus professor of clinical pathology and past president at the New York Post-Graduate Medical School and Hospital, Columbia University; served on the staffs of the Roosevelt, Bellevue and New York Lying-In hospitals; died in the New York Post-Graduate Medical School and Hospital Oct. 10, 1947, aged 80.

Christopher Adam Henry Arnecke * Arneckeville, Texas; University of the South Medical Department, Sewanee, Tenn., 1895; died Sept. 2, 1947, aged 87, of coronary occlusion.

Theodorus Bailey, New York; Columbia University College of Physicians and Surgeons, New York, 1899; at one time instructor at the New York Polyclinic; served on the staff of Manhattan State Hospital; died in Dania, Fla., Sept. 25, 1947, aged 72, of coronary occlusion.

William Augustus Ball * Wanette, Okla.; Chattanooga (Tenn.) Medical College, 1897; died recently, aged 74, of hypertension.

Daniel Bradley Brinsmade * Major, U. S. Army, retired, Belmont, Mass.; Columbia University College of Physicians and Surgeons, New York, 1900; entered the medical corps of the U. S. Army in 1920; retired Nov. 30, 1933 for disability in line of duty; served in France during World War I; at one time surgeon in charge of the Watertown (Mass.) Arsenal; died Sept. 25, 1947, aged 73, of cerebral hemorrhage.

William Henry Burgess * Orlando, Fla.; Louisville (Ky.) Medical College, 1907; at one time practiced in Williamson, W. Va.; member of the West Virginia State Medical Association; died Oct. 7, 1947, aged 80, of heart disease.

William James Burgess, Verona, N. J.; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1901; affiliated with the Essex Mountain Sanatorium; died in St. Francis Hospital, Burlington, Iowa, Oct. 1, 1947, aged 69, of carcinoma of the bladder.

Charles Elbert Byler, Lepanto, Ark.; University of Tennessee College of Medicine, Memphis, 1914; died Sept. 23, 1947, aged 60, of coronary occlusion.

Edgar M. Carman, Vashti, Texas (licensed in Texas under the Act of 1907); member of the American Medical Association; died in Gladstone, N. Mex., recently, aged 75, of angina pectoris.

Albert C. Chenoweth, Huntington, Ind.; Hahnemann Medical College and Hospital, Chicago, 1908; died Oct. 6, 1947, aged 70, of cerebral hemorrhage.

Alvin Harvey Chilson, Plymouth, Iowa; State University of Iowa College of Medicine, Iowa City, 1913; member of the American Medical Association; died in Cherokee recently, aged 62, of chronic myocarditis.

Clifton Mather Cooley * New Britain, Conn.; Yale University School of Medicine, New Haven, 1908; vice chairman of the appeal board and a member of the draft board during World War I; served as medical examiner for the city of New Britain; affiliated with New Britain General Hospital, where he died Sept. 5, 1947, aged 66.

Okey Warren Coplin, Elizabeth, W. Va. (licensed in West Virginia in 1902); served as county health officer and county sheriff; died in St. Joseph's Hospital at Parkersburg, Oct. 6, 1947, aged 71, of cerebral hemorrhage.

James H. Edgar, Richland, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1900; died recently, aged 73, of chronic myocarditis.

Gayfree Ellison, Pawhuska, Okla.; born in Norman, Okla., June 25, 1916; University of Oklahoma School of Medicine, Oklahoma City, 1940; member of the American Medical Association; interned at Baltimore City Hospital; served two years in Europe, Africa and the Middle East during World War II; awarded the Bronze Star Medal, five battle stars and the American Defense Medal; formerly on the staff of the State Hospital in Clinton; was found dead Sept. 18, 1947, aged 31.

Robert Conway Finlay, Glen Allan, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1909; member of the American Medical Association; served on staff of King's Daughters' Hospital, Greenville; died Oct. 16, 1947, aged 63, of diabetes mellitus and obliterative endarteritis.

Minnetta C. Flinn-Jordan * Wabash, Ind.; University of Michigan Homeopathic Medical School, Ann Arbor, 1905; died Sept. 25, 1947, aged 78.

Ashby Floyd, Phenix City, Ala.; Medical Department of Tulane University of Louisiana, New Orleans, 1892; served on the school board, as city commissioner and as mayor; city recorder; died Oct. 3, 1947, aged 81.

Robert David Furlong, University City, Mo.; St. Louis University School of Medicine, 1933; served with the U. S. Public Health Service Reserve of the Coast Guard during World War II; affiliated with St. Mary's Hospital, Josephine Heitkamp Memorial Hospital, Jewish Hospital and the Missouri Baptist Hospital; died Oct. 24, 1947, aged 36, of coronary occlusion.

Paul Middleton Gamble, Albert Lea, Minn.; University of Minnesota Medical School, Minneapolis, 1924; member of the American Medical Association; died Sept. 14, 1947, aged 49, of carcinoma of the right lung.

William Ginsberg * St. Paul; University of Minnesota Medical School, Minneapolis, 1915; served overseas during World War I; major, medical reserve corps, not on active duty; on the staffs of St. Luke's, St. Joseph's and Miller hospitals; died Sept. 21, 1947, aged 57, of acute coronary occlusion and hypertension.

Hyman Maurice Glasston * Linden, N. J.; University of Vermont College of Medicine, Burlington, 1924; served during World War I; formerly physician for the board of health, board of education and fire department; for many years a trustee of the public library; served on the staffs of the Elizabeth General and St. Elizabeth's hospitals in Elizabeth, N. J.; died in New York Oct. 19, 1947, aged 47, of coronary disease.

Margaret Ann Gould * Pittsburgh; Trinity Medical College, Toronto, Canada, 1898; an Affiliate Fellow of the American Medical Association; died Oct. 30, 1947, aged 77.

Irving Greenberg * South Fallsburg, N. Y.; University and Bellevue Hospital Medical College, New York, 1917; died Oct. 13, 1947, aged 54, of cerebral hemorrhage and arteriosclerosis.

Thomas S. Grissom, Mount Pleasant, Texas; Memphis (Tenn.) Hospital Medical College, 1900; president of the Titus County Medical Society; died Sept. 27, 1947, aged 75, of congestive heart disease.

Frederick Grunwald, Louisville, Ky.; Kentucky School of Medicine, Louisville, 1898; member of the American Medical Association; served overseas during World War I; major, medical reserve corps, U. S. Army, not on active duty; for many years on the staff of the St. Mary and Elizabeth Hospital, where he died Sept. 25, 1947, aged 73.

Robert Lee Hagaman, Raymond, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1891; affiliated with the Baptist Hospital, Jackson, where he died Oct. 15, 1947, aged 81, of myocardial failure.

Allen Richmond Howard * Major, U. S. Army, retired, North Attleboro, Mass.; Cooper Medical College, San Francisco, 1911; Army Medical School, 1917; entered the medical corps as a first lieutenant in 1917; served during World War I; retired July 31, 1929 after twelve years' service; served on the staffs of the Washingtonian Hospital in Boston and the Sturdy Memorial Hospital in Attleboro; died June 4, 1947, aged 60, of coronary occlusion.

Winfred Lewis Howe, Everett, Mass.; Tufts College Medical School, Boston, 1900; member of the American Medical Association; chairman of the school committee and board of health; affiliated with the Massachusetts Memorial Hospital, Boston; died recently, aged 72, of arteriosclerotic heart disease.

Theodore Johnston * Chicago; Bennett Medical College, Chicago, 1905; formerly professor of anatomy at his alma mater; for many years physician for the Atchison, Topeka and Santa Fe Hospital Association; died in Evangelical Hospital, Oct. 12, 1947, aged 73, of chronic myocarditis and arteriosclerosis.

Wayne Theodore Killian * Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1906; professor emeritus of anesthesia at his alma mater; member of the American Society of Anesthetists; past president of the Medical Club of Philadelphia; for many years on the staff of Hahnemann Hospital, where he died Oct. 11, 1947, aged 68, of myocardial infection.

George Franklin Lamb * Grand Rapids, Mich.; University of Toronto Faculty of Medicine, Toronto, Canada, 1903; served during World War I; on the staffs of Blodgett and St. Mary's hospitals; died Oct. 6, 1947, aged 74, of carcinoma of the colon.

George Rufus Leonard, Chicago; Indiana University School of Medicine, Indianapolis, 1908; on the staff of Ravenswood Hospital; died Oct. 30, 1947, aged 70, of heart disease.

George B. Lowrie, Detroit; Detroit College of Medicine, 1900; member of the American Medical Association; for many years on the staff of the Harper Hospital; chief surgeon for the Michigan Central Railroad; served on the faculty of his alma mater; died Sept. 21, 1947, aged 73.

Orban Gayle McConnell • San Jose, Calif.; Washington University School of Medicine, St. Louis, 1924; served as a first lieutenant in the U. S. Army during World War I; medical examiner and inspector of selective service during World War II; on the staff of the O'Connor Sanitarium; died Sept. 21, 1947, aged 57, of injuries received in an automobile accident.

Edmund Johnson McNeil, Cambridge, Mass.; Tufts College Medical School, Boston, 1903; died recently, aged 75, of arteriosclerosis.

Robert Jack Mitchell • New York; Columbia University College of Physicians and Surgeons, New York, 1901; died in St. Luke's Hospital Sept. 15, 1947, aged 69.

Harold Alphonsus Murphy • Boston; Tufts College Medical School, Boston, 1915; died Sept. 23, 1947, aged 56, of carcinoma of the stomach.

Carlton Maurice Neiberg, Pittsburgh; University of Illinois College of Medicine, Chicago, 1925; specialist certified by the American Board of Orthopedic Surgery; member of the American Medical Association and American Academy of Orthopedic Surgeons; on the staffs of Columbia, Children's and Pittsburgh hospitals, died Sept. 25, 1947, aged 47.

Philip Lawrence Patrick • Marceline, Mo.; Washington University School of Medicine, St. Louis, 1902; past president of the Linn County Medical Society; served during World War I; died Sept. 19, 1946, aged 71, of cerebral hemorrhage.

James V. Prewitt, West Point, Ky.; St. Louis College of Physicians and Surgeons, 1889; died Oct. 9, 1947, aged 84, of chronic myocarditis.

John Marvin Proctor • Hot Springs National Park, Ark.; University of Tennessee Medical Department, Nashville, 1906; served as a member of the state board of health; councilor of the Seventh District of the Arkansas Medical Society; died recently, aged 69, of abdominal hemorrhage.

Charles Armand Rabethge, Randolph, Mass.; College of Physicians and Surgeons, Boston, 1891; Jefferson Medical College of Philadelphia, 1894; University of Michigan Homeopathic Medical School, Ann Arbor, 1898; died Sept. 17, 1947, aged 85.

John Dexter Rice, West Boylston, Mass.; Tufts College Medical School, Boston, 1940; interned at the Worcester City Hospital in Worcester, Mass., and served a residency at the Massachusetts Eye and Ear Infirmary in Boston; diplomate of the National Board of Medical Examiners; killed Oct. 4, 1947, aged 32, in an automobile accident near Bowling Green, Ohio.

Mary Ann Nutting-Sanborn, Meredith, N. H.; College of Physicians and Surgeons, Boston, 1890; died Sept. 6, 1947, aged 85.

John Wilson Sayer, Watertown, N. Y.; Syracuse University College of Medicine, 1935; member of the American Medical Association; interned at St. Vincent's Hospital in Staten Island and served a residency at the Flower and Fifth Avenue Hospitals in New York; on duty in the European theater of operations during World War II; found dead Sept. 25, 1947, aged 37.

Keith Sears, Trumansburg, N. Y.; Cornell University Medical College, New York, 1903; died Sept. 10, 1947, aged 70.

James M. Seliskar, Cleveland; Western Reserve University Medical Department, Cleveland, 1905; affiliated with Charity Hospital; died Sept. 23, 1947, aged 67, of arteriosclerosis.

Foster Clarke Shaffer • Douglas, Wyo.; Jefferson Medical College of Philadelphia, 1925; served as a member of the board of examiners; for eight years member of the city council; for many years a member of the school board and a health officer; died recently, aged 46, of heart disease.

Herbert D. Sterrett, Hutchinson, Kan.; Ensworth Medical College, St. Joseph, Mo., 1899; University of Kansas School of Medicine, Kansas City, Kan., 1906; died recently, aged 70, of leukemia.

August Strauch, Chicago; Medizinische Fakultät der Universität Wien, Austria, 1898; formerly on the faculty of Rush Medical College; served on the staff of Cook County Hospital; died Oct. 13, 1947, aged 74.

James Porter Strickler • Scottsdale, Pa.; Jefferson Medical College of Philadelphia, 1901; died recently, aged 69, of cerebral thrombosis.

Oscar F. Sugg, Corydon, Ky. (licensed in Tennessee in 1896); died Oct. 14, 1947, aged 88, of myocarditis.

Samuel Sullivan, Chicago; Dearborn Medical College, Chicago, 1907; served during World War I; died Oct. 8, 1947, aged 71.

Edward Eugene Terrell, Cranford, N. J.; University of Chicago School of Medicine, 1931; member of the American Medical Association; interned at the New Haven (Conn.) Hospital; formerly resident physician at the Rockefeller Institute for Medical Research in New York; served in the Southwest Pacific during World War II; for many years school physician; on the staff of the Muhlenberg Hospital in Plainfield, where he died Oct. 2, 1947, aged 44, of acute nephrosis and pneumonia.

U. G. Mitchell Walker, Flint, Texas (licensed in Texas under the Act of 1907); member of the American Medical Association; died in a hospital at Jacksonville recently, aged 77, of pulmonary edema.

Thomas John Walshe, New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1897; member of the American Medical Association; served on the staffs of the Charity Hospital and the Southern Baptist Hospital, where he died recently, aged 71, of coronary thrombosis.

Joseph P. Wilson • Scottsburg, Ind.; Kentucky University Medical Department, Louisville, 1905; secretary of the Scott County Medical Society; county physician; died Sept. 23, 1947, aged 82, of coronary thrombosis.

William Price Womack, Shelbyville, Tenn; University of Tennessee College of Medicine, Memphis, 1933; interned at Baptist Memorial Hospital in Memphis; died Sept. 15, 1947, aged 43, of hypertension with acute heart failure.

DIED WHILE IN MILITARY SERVICE

Lavin Milford Andersen, Manistee, Mich.; University of Michigan Medical School, Ann Arbor, 1924; served an internship and residency at the Long Island College Hospital in Brooklyn, where he served as assistant clinical professor of radiology; formerly on the staffs of the Brooklyn Eye and Ear, the Samaritan and the Midwood hospitals, all in Brooklyn; specialist certified by the American Board of Radiology; began active duty as a major in the medical corps, Army of the United States, in October 1942; stationed at Camp Myles Standish at Taunton, Mass., and at Camp Butner, N. C., where he died Sept. 9, 1945, aged 46, following a gallbladder operation.

Melvin Denver Deck, Provo, Utah; Washington University School of Medicine, St. Louis, 1943; interned at Minneapolis General Hospital in Minneapolis; began active duty as a first lieutenant in the medical corps, Army of the United States, on March 2, 1944; stationed at the Medical Department Replacement Pool, Stark General Hospital, Charleston, S. C., with temporary duty at the Medical Field Service School, Carlisle Barracks, Pa.; relieved from duty at Stark and assigned to duty with the 133d General Hospital, Camp Gordon, Ga., in May 1944; subsequently went overseas with that unit; promoted to captain; killed in the Pacific area off Leyte Sept. 6, 1945, aged 29, while a passenger on a C-47 (skytrain) transport plane.

Emanuel Dejnozka Jr., Rock City Falls, N. Y.; born in New York, July 26, 1916; Albany Medical College, 1942; diplomate of the National Board of Medical Examiners; interned at Misericordia Hospital in New York; appointed first lieutenant in the medical department, Army of the United States, June 4, 1942 and began active duty July 3, 1943; assigned to Station Hospital and the 3706th Army Air Forces Base Unit at Sheppard Field, Texas; promoted to captain; on July 9, 1945 arrived in the European theater of operations, where he was assigned to headquarters, 9th Air Disarmament Group, 53d Air Disarmament Squadron and 1515th Quartermaster Battalion; died Dec. 4, 1945, aged 29, of injuries received when the ambulance in which he was riding near Walsdorf, Germany, skidded and went over an embankment.

Homer LaFayette Hobbs, Greensboro, N. C.; Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C., 1944; interned at the Paterson (N. J.) General Hospital; entered the medical corps of the Army of the United States as a first lieutenant on July 6, 1945; killed in an automobile accident in Harrisburg, Pa., April 16, 1946, aged 27.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 30, 1947.

The British Medical Association and the National Health Service

In a letter to the *Daily Telegraph* Sir Ernest Graham-Little, dermatologist and member of Parliament, who is the great protagonist of a state medical service, has summed up the present position. He first points out the reluctant consent of the Minister of Health, Mr. Bevan, to consult with the members of the medical profession on the scheme. As he sees it, the medical profession, under the leadership of the British Medical Association, demands a radical amendment of the National Health Service Act as a preliminary to accepting service under the act. It is therefore important to consider the strength and influence of the British Medical Association. Four years ago its membership was about 40,000; today it is 56,000. Some 70,000 practitioners are on the medical register, but only about 50,000 are in practice. It is clear that the present membership includes practically all those who are in active practice, a record of special significance, as membership is voluntary.

The promised medical service will call for medical staffing twice or thrice as large as the existing number of active practitioners. It takes six years to train a general practitioner and from ten to twelve years to train a specialist. Thus the law cannot be properly enforced for two or three decades, if at all. Meanwhile, the existing health services, admitted to be among the best in the world, will be completely disrupted. Therefore it is not surprising that Mr. Bevan should be reluctant to disclose the actual available resources with which he proposes to launch the act within the next eight months. The National Health Service is now law, and the government proposes to put it into operation soon, but negotiations between the British Medical Association and the government are still proceeding. These have not been disclosed, though concern regarding them has been expressed. The medical profession has been assured that its representatives are making a firm stand on the demand that the act should be amended according to its wishes. The increased membership of the British Medical Association, due to apprehensions aroused in the profession by attempts to socialize the practice of medicine, has strengthened its position in its struggle with the government. Its claim to represent practically the whole active membership of the profession cannot now be gainsaid.

Research on Cancer

At the annual meeting of the British Empire Cancer Campaign the Duke of Gloucester stated that \$540,000, a record sum, had been collected in the past financial year. If additional funds were available progress could be greatly speeded up; more of the best brains in the Empire could be attracted to cancer research, and the equipment of research centers could be much improved—all of which would go far toward hastening the conquest of cancer, which is now the chief killing disease. The number of deaths due to cancer of the lung have increased sixteen and one-half times in men and eight times in women since 1921, although the incidence of cancer of the larynx has not increased in either sex in the last fifteen years. Some authorities consider that the apparent increase in cancer of the lung is due wholly to improved methods of diagnosis, while others emphasize the high proportion of error which allows over 40 per cent of cases to escape diagnosis even under the best conditions of hospital practice. The examination of sixty-five occupations has disclosed none which account for any large fraction of the increase of deaths attributed to cancer of the lung.

The Journal of Clinical Pathology

The British Medical Association announces the publication of a new periodical, the *Journal of Clinical Pathology*. It will consist of original articles, reviews, technical methods and abstracts which will be useful to practicing clinical pathologists, whose chief concern is to elucidate disease in man. The editor is Dr. A. Gordon Signy, who has been appointed by the Association of Clinical Pathologists. The journal will be published quarterly, and the subscription is \$6 per annum.

The Virus Question

Lord Horder said that a special committee has been set up to develop research into the whole position of virus in relation to cancer, and a grant of \$100,000 has been set aside for the purpose. The view that cancer lay outside the scope of chemotherapy was probably premature. Recent work has been quite hopeful, and the campaign appointed another special committee to organize research in this field. In the field of physics atomic energy has brought new tools of use in research and treatment.

ITALY

(From Our Regular Correspondent)

Nov. 15, 1947.

Effect of Ascorbic Acid on Intradermal Tuberculin Reaction

At a meeting of the Ferrara section of the Italian Society of Experimental Biology, Dr. C. Mattei, of the Institute of Medical Pathology of the University of Ferrara, reported on the changes in the intradermal tuberculin reaction in persons to whom ascorbic acid had been administered. His research was aimed to demonstrate one aspect of the immunizing action of ascorbic acid. The method employed was to produce on one forearm an intradermal reaction with Koch's old tuberculin before treatment with ascorbic acid and to produce an analogous elevated patch on the other forearm with distilled water. At intervals of fifteen minutes, twelve hours and twenty-four hours, the outline of the zone was examined through a small sheet of cellophane; an elevated red spot was clearly visible. The area involved was measured. The number indicating in millimeters the extent of the elevated patch has been defined as the "tuberculin value." Then the organism was loaded with ascorbic acid by intravenous administration, until a state of saturation was reached, as determined by the amount of ascorbic acid excreted daily in the urine, using dichlorophenolindophenol.

Treatment was given to 21 patients divided in three groups: patients with hepatic disorders, patients with tuberculosis and patients with various disorders. All the patients had suffered with malaria. Results were as follows: in the group with hepatic disorders the medium tuberculin value was increased from 61 before the administration of ascorbic acid to 140 after its administration (140 per cent). In the group with tuberculosis the increase was from 61 to 84 (38 per cent), and in the group with various disorders from 99 to 163 (65 per cent). In only 5 of the 21 patients who were treated was a reduction of the tuberculin values observed with medium variations of less than 35 per cent.

The results of Mattei's research thus demonstrated that in the majority of cases the saturation of the organism with ascorbic acid determined an increase in the intensity of the intradermal reaction after the injection of tuberculin.

Sulfonamide Compounds and Penicillin

At a meeting of the Roman Medicosurgical Association in Ravenna, Dr. L. Fontana presented the results obtained by him with sulfonamide compounds and penicillin when administered by the intrapleural and the intra-articular route. The speaker reported highly satisfactory results in many cases, even of the multilocular type, of empyema by means of intrapleural injection.

tions of sulfonamide compounds (sulfapyridine and sulfathiazole) after previous removal of a certain amount of pus. He reported instances of definite and fairly rapid recovery. After penicillin came on the market, Dr. Fontana adopted the intrapleural injection in doses of 50,000 to 100,000 units combined in general with the administration of sulfonamide compounds, and he has obtained highly satisfactory results. For pulmonary abscess and gangrene the speaker considered penicillin by the endobronchial route and by means of bronchoscopy the method of choice, particularly in the many cases which are inaccessible by the transthoracic route, but he did not have direct experience. Excellent results were obtained also in cases of suppurative arthritis with intra-articular injections of sulfonamide compounds or penicillin after previous removal of pus. Rapid and definite improvement occurred with few and temporary functional residues.

Dr. Galassi reported the results obtained with transthoracic intrafocal injections of penicillin in the treatment of pulmonary abscess. The technic was in principle the same as that used by other authors, i. e., entering the lung under roentgenologic control and from there the cavity of the abscess. Among the inconveniences manifested during such trials, the most important was the production of a pneumothorax in 1 instance, which, however, subsided spontaneously within a short time. From the small number of cases so far observed, Dr. Galassi has not been able to draw definite conclusions, but he considers the intrafocal treatment of pulmonary abscess with penicillin as promising.

SPAIN

(From Our Regular Correspondent)

MADRID, Nov. 18, 1947.

History of Anatomy

At the Madrid Medical Association, an interesting course of lectures has been given by Dr. P. Lain Entralgo, who has brilliantly succeeded in the Chair of History of Medicine of the Madrid Faculty the now retired Dr. E. Garcia del Real. The object was to present Dr. Lain's concept of the historical evolution of anatomy, whose basic stages are represented, according to him, by Galenus, Vesalius, Bichat, Virchow and Gegenbaur, passing through the interlude of Testut, to end in Braus's "Anatomie des Menschen."

In his survey Lain passed successively through the following considerations: if the anatomist proposes to describe the external appearance and the internal structure of man, it is evident that man presents two fundamental constituent signs: the external and internal form of the body and the movement of that body which displays his living activity, which signs had perforce to mark rules, norms of thought, for the first Greek anatomists. Hence the first anatomic vision, faithful to the cultural lines of Greece, was that of Galenus, who described the body as a living anatomy.

The following stage is represented by Vesalius, who, during the Italian Renaissance and himself a perfect dissector of (motionless) corpses, describes these as though they were immobile statues with only potential movement. Therefore his anatomic concept is architectural and static. For this reason, he—an innovator in anatomy but a traditionalist in physiology—describes, in his "De Fabrica Humani Corporis," the human statue as potentially—only potentially—animated by the three old *Dynameis* of classical physiology.

That static anatomic body of Vesalius' is first put into movement by the physiologists, who appear in the course of time: Fabricius ab Aquapendente, Sanctorius, Harvey and Borelli. The forces and laws which will put it into operation will no longer be Galenus's old *Dynameis* but those indicated by the new physiologic knowledge.

In the eighteenth century Bichat begins to see the body no longer as a static unit ready to move but as a whole composed

of parts, which are the tissues, harmoniously related in the vital conjunction. What in Vesalius was an architectural element is replaced in Bichat by the tissues of every element, in which reside the specific forces of the vital activity.

Fifty years later Virchow, with the microscope already available and two contributions brought by time: the genetic idea and individualism—which will act and influence him as the atmosphere of the time—will see a cell where Bichat saw a tissue. Cellular pathology, which Virchow explains, is, Lain said: "a federal republic of vital units: the cells grouped into tissues, organs and systems." Bichat and, above all, Virchow then attempt to give an analytic explanation in exclusively anatomic descriptions, forgetting the real form of the body as the human eye sees it.

In this situation Gegenbaur appeared, "the anatomist who most genuinely projected on anatomic description the idea of the evolution of living beings," "making anatomy scientific by means of genetic explanation" without giving up the cellular theory. Gegenbaur focused anatomic study, investigating the steps made by the body previously, and came to conceive the human body—its form—as "the occasional and transitory state of an evolution, of a progressive process toward more complex and perfect biologic states." But Gegenbaur proceeded in the Vesalian manner: he studied the parts of the body, the organs and the tissues, separately in the first chapters of his work.

From this panoramic view of Lain's we infer that Galenus, Vesalius, Bichat, Virchow and Gegenbaur are the representatives of the various ways of looking at the human body throughout history and that their names may be used to designate the respective interpretations: each of them represents in anatomy the cultural panorama of the respective historical situation, not only because the means of observation were different at every moment in history but because the descriptive mentality of each period differed.

The anatomic vision of today is not, according to Lain, that of Testut, which looks like a game, but that represented by Braus. Braus's "Anatomy" is, in a certain way, a "return to Galenus"—his descriptive point of view is functional or physiologic—although, naturally, without giving up the ulterior tectologic and evaluative points of view. Braus attempts, not always successfully, to reduce to systematic unity the functional, tectologic and genetic consideration of human anatomy.

This course was attended by large audiences who listened to Professor Lain Entralgo with evident admiration. In the Spanish medical culture of the present, Lain Entralgo represents the intellectual sign of the times, giving to the history of medicine intellectual and philosophic contents which, at his age, can only be found in one as well endowed personally as he is.

These data are advanced to readers of THE JOURNAL because of the great interest awakened by their exposition in the Spanish public, always avid for weighty concepts, and because of the impetus now being given to historical studies by this master who is little known abroad.

Of his lectures, he has so far published monographically only the one on Bichat.

Congress of Digestive Pathology and Nutrition

The fifth Spanish Congress of Digestive Pathology and Nutrition was held in Saragossa October 26-30. The first report was read by Dr. C. Jimenez Diaz, professor in the Madrid Faculty of Medicine, and his collaborator Dr. Marina Fiol on "Chronic Enteropathy of the Liver." More about this paper will appear in another letter, because it was of great interest.

The second report, by Professor J. Andreu Urrea, of Seville University, dealt with "The Influence of the Midbrain and the Pituitary Body on Glucide Metabolism." Dr. Andreu summed up his experimental work of a number of years, coming to highly interesting conclusions.

The subject "Problems of Chronic Appendicitis" was expounded by Drs. Pinos and Piñiguera, and the fourth report, by Professor G. Marañon, on "Thinness, Its Pathogenesis and Treatment" was read in summarized form by Dr. Gutierrez Arrese in the author's absence.

During the congress, meetings were held by the sections of digestive pathology, nutrition, surgery and therapeutics and diagnosis, in the course of which some two hundred communications were heard.

Professor Bonorino Udaondo, of the Buenos Aires (Argentina) Faculty of Medicine, lectured on "Intestinal Polyposis"; Professor Teófilo Hernando on "Intestinal Tuberculosis," and Dr. Callar Mones, of Barcelona, on "Medical and Surgical Treatment of Gastroduodenal Ulcer." The Congress had an extraordinarily large attendance of specialists. The next congress will be in Santander in 1950.

Improvements at Seville

The Seville Faculty of Medicine has been greatly improved. About a year ago an Institute of Anatomy was opened, and now another building is being erected to house the Departments of Physiology, Biochemistry, Pharmacology and Microbiology. Another building is under construction for a new Polyclinic Institute. Although the Old Central Hospital annexed to the Faculty of Medicine is out of date, it is being gradually renewed. Nevertheless, the city still lacks a modern hospital such as a university city of its rank should have.

The most significant work done in the Medical Schools of Seville University in recent years is that of Professor J. Andreu Urrea's School, on clinical and experimental lines, on the influence of the midbrain and the pituitary body in carbohydrate metabolism. Dr. Andreu directs an excellent school in which studies are conducted notwithstanding the difficulties arising from a shortage of materials. In his school papers have also been published on the origin of the proteins of the plasma (Dr. Villar and collaborators) and on intestinal absorption (Dr. Leon Castro); another is now being prepared by the latter author on immunity.

The Seville Royal Academy of Medicine, whose president is Dr. Dominguez Rodino, maintains a permanent state of activity, being a center for meetings and lectures, and so does the Seville Royal Medical Society of Hospitals, which was directed by Professor P. Rodrigo Sabalette up to the time of his death.

To sum up, the medical scientific activity of Seville is on the increase and carries on at a promising pace. It is expected that when material contributions and working conditions improve the Seville Schools will attain to the greatest fame in Spain.

Professor P. Rodrigo Sabalette

In the terrible explosion in the torpedo dump at the Cadiz naval yards, Professor P. Rodrigo Sabalette died in the prime of life with two of his sons. Professor Rodrigo Sabalette was one of the most distinguished figures in Spanish medicine. A son of Professor L. Rodrigo Lavin (a great Spanish physiologist who, at 80 years of age, is thus bereft) he studied in England and Germany mostly on problems of neurologic physiology. In recent years he wrote the chapters on Diseases of the Nervous System in the "Treatise of Medical Pathology" published under the editorship of Professor M. Banuelos, in which he displayed a deep didactic sense and magnificent clinical and therapeutic training and knowledge. He was the author of a monograph on "Cancer of the Lung" and of an excellent paper on "Slow Endocarditis and Sepsis," and his last papers, on brain tumors, still unpublished, represent a notable advance in this field. He was an exemplary member of Spanish university life, and his fine character enabled him to overcome great difficulties in his profession. His fellow workers and pupils, who owed so much to the chivalrous conduct and teaching of this great master, will not easily find another to replace him.

COPENHAGEN

(From Our Regular Correspondent)

Dec. 9, 1947.

BCG Vaccination in European Countries by the Danish Red Cross

Since BCG vaccination was first adopted in Denmark in 1927, this measure has proved so effective that the vaccine has lately become an article for export, witness the work of Danish BCG teams in Poland, Yugoslavia, Hungary, Austria and the American and British zones in Germany. Each of these Red Cross teams consists of one physician and two nurses, and it is hoped that the present number of fifteen teams will ultimately be quadrupled. But as Denmark alone cannot provide as many as sixty doctors trained in BCG vaccination, some of the newer teams must be staffed by members who have come from the aforementioned countries to study the highly specialized anti-tuberculosis work in Denmark. It is hoped that Norway also will supply a certain number of BCG specialists. In the past half year about half a million persons have already been vaccinated, and in Yugoslavia, where the Danes have worked for nine months, the government has now taken over this work. In Poland, the first country visited by the Danish teams, practically every one over the age of 25 was found to be tuberculin positive and was therefore not eligible for BCG vaccination. Accordingly, attention is being concentrated on persons under this age. The Danish Red Cross enjoys the active support of the Danish Public Health Service and of the State Serum Institute in Copenhagen. The sum of 3,500,000 kroner has been earmarked by the Danish Red Cross for BCG vaccination abroad, and three aeroplanes have been purchased for the supply of fresh vaccine at short intervals to the various centers in which the teams happen to be working. It is calculated that the cost per head of this measure is only $\frac{1}{2}$ krone (50 öre) and that each team can deal with 1,500 to 2,000 persons every day. The goal which has been set by the Danish Red Cross is a total of 1,000,000 vaccinations per month.

The Wartime Rise in the Danish Birth Rate

Why did the Danish birth rate rocket up during the war in spite of shortages of food, fuel, houses, domestic servants and much else supposed to influence fertility? In an attempt to answer this question, Carry Hedemann quotes the following figures: In 1939 there were 67,900 births and in 1940 there were 70,100. By 1946 this figure had jumped to 96,000. At this rate there would have been some 100,000 live births annually in a short time, but from August 1946 onward there was a decline instead of a further rise. Was the wartime rise due to the blackout and other restrictions which made married couples more homebound than in peacetime? But in Sweden, where the birth rate also rose definitely during the war, there was no blackout or "house arrest" forcing married couples to remain at home. Did the German troops contribute appreciably to the rise in the birth rate? To be sure, they sired some 4,000 to 5,000 children in Denmark, but these figures are but a small fraction of the total rise. Was it due to a passing vogue, the bearing of many children having become rather fashionable instead of a stupendous mistake and disgrace? What is plain is that the knowledge of contraceptives acquired by the public has not had such a devastating effect on the birth rate as their opponents would have us believe. High wages and a resulting sense of social security may well have played an important part, and with all these and many other factors possibly influencing the birth rate, we must deny ourselves the luxury of clearcut conclusions, contenting ourselves with the undeniable fact that the Danish birth rate went up during the war by leaps and bounds.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in *THE JOURNAL*, Jan. 3, page 58.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination*. Montgomery, June 22-24, 1948. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery 4.

ALASKA: * *Juneau*, March 2. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARKANSAS: * *Examination*. Little Rock, June 3-4. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana.

CALIFORNIA: *Oral*. San Francisco, Jan. 17-18; Los Angeles, Feb. 28-29. *Written Examination*. Los Angeles, March 1-4. *Oral and Clinical Examination for Foreign Graduates*. Los Angeles, Feb. 29; San Francisco, June 6. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

CONNECTICUT: * *Examination*. March 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic Examination*. Derby, March 9-10. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

DELAWARE: *Examination*. Dover, Jan. 13-15. *Endorsement*. Dover, Jan. 20. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * *Reciprocity*. Washington, D. C., March 8. Sec., Commission on Licensure, Dr. G. C. Ruhland, 4130 E Municipal Bldg., Washington.

FLORIDA: * *Examination*. Jacksonville, June 29-30. *Reciprocity*. Jacksonville, June 28. Sec., Dr. Harold D. Van Schaick, 6675 Windsor Lane, La Gorce Island, Miami Beach 41.

HAWAII: *Examination*. Honolulu, Jan. 12-15, 1948. Sec., Dr. S. E. Doolittle, 881 S. Hotel St., Honolulu, T. H.

IDAHO: Boise, Jan. 13-15. Sec., Miss Estella S. Mulliner, 355 State House, Boise.

INDIANA: *Examination*. Indianapolis, June 1948. Sec., Board of Medical Registration and Examination, Dr. Paul R. Tindall, K of P Bldg., Indianapolis.

IOWA: * *Examination*. Iowa City, March 15-17. Comm., Dr. Walter L. Biering, Dept. of Health, Des Moines.

KANSAS: Kansas City, June 9-10. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: *Examination*. Louisville, June 16-18. Sec., Dr. P. E. Blackerby, 620 S. 3d St., Louisville.

MAINE: Portland, March 9-10. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.

MARYLAND: *Medical Examination*. Baltimore, June 15-18. Sec.-Treas., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homeopathic Examination*. Baltimore, June 15-16. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination*. Boston, March 9-12. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413 E State House, Boston.

MINNESOTA: * *Minneapolis*, Jan. 20-22. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: Jackson, June 1948. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: *Examination*. Kansas City, Jan. 19-21. Exec. Sec., Mr. John A. Hailey, P. O. Box 4, State Capitol Bldg., Jefferson City.

MONTANA: Helena, April 5-7. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEVADA: Carson City, May 3. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: *Examination*. Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination*. Trenton, June 15-17. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW YORK: *Examination*. Albany, Buffalo, New York, Syracuse, Feb. 16-19. Sec., Dr. J. L. Lochner, Jr., Education Bldg., Albany.

NORTH CAROLINA: *Endorsement*. Pinehurst, Jan. 12. Sec., Ivan Procter, 236 Hillsboro St., Raleigh.

OHIO: *Endorsement*. Columbus, April 6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

PENNSYLVANIA: *Examination*. Philadelphia, Jan. 13-16, 1948. Acting Sec., Board of Medical Education and Licensure. Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

SOUTH CAROLINA: *Written Examination*. Columbia, June 21-23. *Endorsement*. Feb. 2. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * *Pierre*, Jan. 20. Sec., State Board of Health, Dr. Gilbert Cottam, Capitol Bldg., Pierre.

TEXAS: Austin, Feb. 19-21. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas 2.

UTAH: *Examination*. Salt Lake City, June, 1948. Asst. Dir., Department of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VERMONT: *Examination*. Burlington, Feb. 5-6. Sec., Dr. F. J. Lawless, Richmond.

WASHINGTON: * *Examination*. Seattle, Jan. 19-21. Sec., Dept. of Licenses, Miss Virginia Wotherspoon, Olympia.

WEST VIRGINIA: Charleston, Jan. 12-14. Comm., Public Health Council, Dr. N. H. Dyer, State Capitol, Charleston 5.

WISCONSIN: * *Examination*. Madison, Jan. 13-15. *Reciprocity Oral*. Madison, Jan. 14. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.

WYOMING: *Examination*. Cheyenne, Feb. 2. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau, Feb. 23-29. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

DISTRICT OF COLUMBIA: *Examination*. Washington, April 19-20. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington.

FLORIDA: *Examination*. June 5. Final date for filing application is May 23. Sec., Mr. M. W. Emmel, Univ. of Florida, Gainesville.

IOWA: Des Moines, Jan. 13, April 13, July 13, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

NEBRASKA: *Examination*. Omaha, Jan. 13-14. Dir., Dept. of Health, Mr. Oscar F. Humble, Room 1009, State Capitol Bldg., Lincoln 9.

OKLAHOMA: Spring 1948. Sec., Dr. Frank Clinton Gallahe, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination*. Portland, March 6. Sec., Basic Science Examining Committee, Mr. C. D. Byrne, Univ. of Oregon, Eugene.

WASHINGTON: *Examination*. Seattle, Jan. 14-15. Sec., Dept. of Licenses, Miss Virginia Wotherspoon, Olympia.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Husband's Action for Loss of Services of Wife Caused by Malpractice.—The plaintiff filed suit for damages for loss of the services and companionship of his wife alleged to have been caused by the malpractice of the defendant physician. From an unfavorable ruling of the trial court, the defendant appealed to the Supreme Court of North Dakota.

In 1943 the defendant physician was engaged to take care of the plaintiff's wife during her pregnancy. Shortly before the time for delivery, which was to be by caesarean operation, the defendant advised the plaintiff's wife that she would not be able to have another baby except by caesarean operation and that a second or successive operation would be dangerous and detrimental to her health. Accordingly it was agreed that the defendant would perform a sterilization operation on the wife at the time of the delivery. This was done and the defendant was paid his fee therefor, the defendant representing that the operation had been successfully and properly performed. Subsequently the plaintiff and his wife, relying on the representation of the defendant and believing that he had properly performed such operation, engaged in normal sexual intercourse and in 1945 the wife again became pregnant. It was again necessary to make delivery by caesarean operation, and the wife suffered such loss of blood therefrom as to require blood transfusions and to gravely endanger her life. The second caesarean operation and the birth of the second child, in addition to the fear and shock suffered by the plaintiff's wife on discovering that the sterilization operation had been a failure, that she was pregnant and that she would again be compelled to have a caesarean operation, permanently impaired her health and rendered her highly nervous and mentally and physically unstable. As a result thereof the plaintiff was compelled to expend a considerable amount of money for medical and hospital care and nursing services for his wife and was and will be deprived of the services and companionship of his wife for a long time—all as a consequence, it is alleged, of the defendant's failure to perform the sterilization operation in a proper and skilful manner.

The defendant physician admitted that he was engaged to perform the medical and surgical services referred to but denied that they were performed negligently or carelessly. He further alleged that the statute of limitations provides, among other things, that actions for the recovery of damages resulting from malpractice must be commenced within two years after the cause of action has accrued, that this is an action for malpractice, that the cause of action accrued at the time the alleged

negligent operation was performed on or about March 16, 1943 and that inasmuch as defendant's services as a physician and surgeon terminated prior to April 1, 1943 and this action was not brought until Nov. 10, 1945 it is barred by the statute.

The court discussed the distinction between an action for malpractice which accrues to the wife and an action for damages for loss of the wife's services because of such malpractice which accrues to the husband. Among other things, the court said that the gist of the husband's cause of action is the loss and expense sustained by him, and not the injuries sustained by her, even though her injuries were caused by the wrongful acts or negligence of another. Such loss and expense sustained by him are not merely items of damages but are essential to the cause of action itself. The two liabilities are distinct. Thus, the fact that the statute of limitations has run against the wife's cause of action will not necessarily prevent the husband from prosecuting his. A cause of action does not accrue, said the court, until the party owning it is entitled to begin and prosecute an action thereon; it accrues at the moment when he has a legal right to sue on it and no earlier. A husband has no right of action for the loss of services, society and companionship of his wife and incidental expense for her treatment and care until the loss of services, society and companionship actually occurs. The negligence of the defendant physician in the performance of the operation on the plaintiff's wife was an invasion of her rights, and any injury sustained by her as a result thereof constituted a tort on her but did not constitute a tort on the plaintiff. The actionable wrong against the plaintiff was the interference with his marital rights, depriving him of his wife's services, society and companionship and requiring expenditures by him for her medical treatment and care. These do not constitute mere items of damage in an action for negligence. They are essential to the cause of action itself, which cannot arise until such consequences have followed the injury.

According to the complaint the plaintiff's wife gave birth to a child on March 7, 1945. The loss of services, society and companionship and expenditures for medical treatment and care occurred after the plaintiff's wife became pregnant with the child so born on March 7, 1945. The present action was commenced Nov. 10, 1945, within two years after the plaintiff's cause of action accrued. The Supreme Court therefore held that the order of the trial court overruling the defendant's defense of the statute of limitations was proper.—*Milde v. Leigh*, 28 N. W. (2d) 530 (N. D., 1947).

Workmen's Compensation Acts: Employer's Liability for Physician's Malpractice.—The claimant was granted an award for compensation for an alleged industrial accident so the defendant industrial commission appealed to the Supreme Court of Colorado.

The claimant, a waitress handling food in a local restaurant, was directed by her employer to secure a health certificate and submitted herself to examination by a physician, who drew from her arm some blood for the purpose of making a blood test required by law. The lesion made by the physician became infected, and as a result of the disability thus created she was forced to leave her employment.

It is admitted that the claimant did sustain a physical injury and that it was the result of an accident. Whether or not this accident "arose out of and in the course of her employment," however, depends on the circumstances under which she submitted to the blood test.

The evidence showed that the claimant and other employees were ordered by their employer to have a blood test made. They were not directed to go to any particular physician but were advised that if they went to a certain doctor the charge for the tests would be \$2 each. The claimant went to a physician of her own choosing for the test. The Colorado general assembly created the State Board of Health, which it empowered "To establish a uniform code of sanitary rules and regulations for the preparation, sale and serving of food." It also provided that the code of sanitary rules and regulations include medical examination of all restaurant employees handling food. Regulation 6 of the state board's laws, rules and regulations provides: "All persons engaged in the handling and preparation of food shall obtain a permit card from the State Board of Health. Application for a permit card shall be made on a form furnished

by the board and shall include a report from a licensed physician stating that the applicant has been examined and found free of communicable disease. Examinations shall include a blood test and other laboratory reports as indicated."

It is apparent, said the court, that the employer was obligated by the state law to have the claimant obtain a health certificate. It was not his regulation or requirement, it was that of the state. The claimant was incapacitated by reason of her compliance therewith. Obviously, as the commission found, her accident did not arise out of and in the course of her employment. Continuing, the court said that it had found no cases involving the question here presented, but that cases where employees have been injured as a result of vaccination or inoculation present similar legal problems. What they hold is, that the right to compensation is determined by the construction placed on the phrase, "arising out of and in the course of employment," and its application to the facts in each particular case. Compensation was allowed in those cases in which the vaccination or inoculation was performed for the benefit of the employer and had been required by him. On the other hand, compensation was denied in those cases where it appeared that vaccination or inoculation was made necessary by reason of public requirement.

In the instant case the claimant was ordered by her employer to take the blood test but this he was legally obligated to do under the statute. The commission was right in finding that the claimant's accident did not arise out of and in the course of her employment. Accordingly the judgment in favor of the claimant was reversed.—*Industrial Commission v. Messinger*, 181 P. (2d) 816 (Colo., 1947).

Drunkenness: Admissibility in Evidence of Chemical Test Showing Amount of Alcohol in Blood.—The defendant was charged with a negligent homicide as a result of his operation of a motor vehicle. From a judgment of guilty and sentence thereon, the defendant appealed to the Municipal Court of Appeals for the District of Columbia.

While the defendant was at a hospital following the automobile accident, he was asked for a specimen of his urine, which could be tested to determine whether or not he was under the influence of alcohol at the time of the accident. One of the police officers warned him that the results of such a test could be used for or against him. The defendant then gave the specimen. At the trial the specimen was produced, properly identified, and the results of the test were admitted in evidence, over objection by the defendant. According to expert testimony the tests showed 0.22 per cent alcohol and established that the defendant was under the influence of alcohol at the time. The defendant did not contend that the specimen was not given voluntarily (there is absolutely no showing of duress, intimidation or entrapment) but that the giving of the specimen was the equivalent of a confession and was therefore protected by the privilege of the Fifth Amendment against self incrimination. In *Novak v. District of Columbia*, 49 A. (2d) 88, J. A. M. A. 134:208 (May 10, 1947), which involved a rather analogous situation, the court did not decide whether the giving of the specimen for analysis was the same, from an evidentiary standpoint, as making a statement or confession. In the present case the Municipal Court of Appeals said that it must now decide the question on which it reserved decision in the Novak case. We hold, said the Court of Appeals, that in taking the specimen there was no violation of any rights guaranteed by the Constitution. The whole history of the privilege against self incrimination shows that it was designed to protect against testimonial compulsion. There was no such compulsion here. The evidence sought was whether the accused was under the influence of alcohol. He does not claim that the scientific test was inaccurate or that the results of the test were incorrectly interpreted. What is obtained from the accused by such action is not testimony about his body, said the court, but his body itself, or as here, fluid or secretions of his body. There seems to be no question that when such a specimen is given voluntarily the analysis thereof is admissible. The Court of Appeals therefore held that the evidence concerning the urinalysis was properly admitted in the trial court and that the judgment of the trial court be affirmed.—*Ridgell v. United States*, 54 A. (2d) 679 (D. C., 1947).

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

Annals of Surgery, Philadelphia

126:381-632 (Oct.) 1947. Partial Index

Address of President: Science and Humanism in Surgery. E. D. Churchill.—p. 381.

Gastro-Esophageal Resection and Total Gastrectomy in Treatment of Bleeding Varicose Veins in Banti's Syndrome. D. B. Phenister and Eleanor M. Humphreys.—p. 397.

Acute Cholecystitis Following Surgical Treatment of Unrelated Disease. F. Glenn.—p. 411.

Consideration of Pathologic Factors Influencing Five Year Survival in Radical Resection of Large Bowel and Rectum for Carcinoma. R. K. Gilchrist and V. C. David.—p. 421.

Adjuncts to Surgical Therapy in Large Bowel Malignancy. I. S. Ravdin, H. A. Zintel and Doris H. Bender.—p. 439.

Observations on Mortality from Acute Appendicitis at a University Hospital, 1916 to 1946. R. N. Schullinger.—p. 448.

*Studies upon Spinal Cord Injuries: I. Development of Automatic Micturition. J. Martin and L. Davis.—p. 472.

Control of Cancer. A. W. Oughterson.—p. 478.

The Specialty of Anesthesia and Its Application in Harvard University Massachusetts General Hospital Department. H. K. Beecher.—p. 486.

Graduate Training in Surgery in Veterans Administration Hospitals. C. B. Puestow.—p. 500.

*Toxoid Immunization in Experimental Gas Gangrene: Preliminary Report. W. A. Altmeier, W. L. Furst, W. R. Culbertson and others.—p. 509.

Pathophysiology of Cause of Death from Coronary Thrombosis. G. Murray.—p. 523.

*Factors Limiting Surgery for Essential Hypertension. P. Heinbecker.—p. 535.

Paradox of Aciduria in Presence of Alkalosis Caused by Hypochloremia. K. K. Van Slyke and E. I. Evans.—p. 545.

Essential Therapeutic Adjuncts in Surgical Arrest of Wolff-Israel Actinomycosis. M. Gage, C. Lyons and P. T. DeCamp.—p. 568.

Evaluation of Methods of Penicillin Therapy in Thoracic Surgery. J. H. Donnelly, F. J. Phillips, J. P. Bartlett and W. E. Adams.—p. 579.

Studies in Postoperative Convalescence. W. H. Cole, R. W. Keeton, N. O. Calloway and others.—p. 592.

Spinal Cord Injuries: Automatic Micturition.—The observations presented by Martin and Davis are based on an experience with 471 patients with injuries of the spinal cord. The establishment of efficient urinary function is one of the primary goals in the care of the patient with an injury of the spinal cord. Urinary function in the patients observed by Martin and Davis has appeared in one of the following five forms: (1) early return to normal micturition; (2) eventual return of partial voluntary control of micturition; (3) involuntary dribbling of urine, or the frequent uncontrolled passage of small amounts of urine; (4) absolute retention, a less common situation, and (5) automatic or reflex micturition. If complete normal urinary control or partial voluntary control aided by special efforts on the part of the patient to empty his bladder cannot be obtained, the ideal condition is that of automatic micturition. In numerous instances the authors have found proof of the efficacy of the indwelling catheter with tidal drainage not only in the establishment of automatic micturition but also as an aid in restoring partial voluntary control. In no case did automatic micturition develop while a suprapubic catheter was in place. On the contrary, many patients developed such urinary control following the removal of the suprapubic tube, placement of an indwelling catheter and training for a period of time thereafter with tidal drainage or with carefully

controlled manual drainage. Automatic micturition will develop following a complete lesion at any level within the spinal cord or cauda equina. It does not appear in the presence of incomplete lesions of the cord. Cystometric examination at regular intervals will indicate when the catheter may be removed to allow the trial of automatic micturition, indicating that a reflex response to tension of the bladder wall is necessary for this activity. Automatic micturition will develop only when there is no mechanical obstruction of the neck of the bladder and when the sphincter is capable of reflex relaxation. Extravesical stimuli are an aid but not a necessity to the development and maintenance of automatic micturition. Automaticity will not develop in the patient with severe bladder sepsis, multiple calculi or severe debilitation.

Experimental Gas Gangrene: Preliminary Report.—Altmeier and his associates studied the possibilities of producing effective toxoid immunity against a severe form of experimental gas gangrene developed in the presence of crushed muscle and dirt in animals whose susceptibility and antigenic response are similar to those of human subjects. The studies were made on 364 guinea pigs, which were injected with Clostridium welchii toxoid and were then challenged at various intervals after the injection of the toxoid. The degree of protection was low in the early experiments, being 12 and 33 per cent, although blood antitoxin levels in excess of 0.1 unit per cubic centimeter were produced before challenge. When similar groups of animals were challenged with injections of toxin or bacterial culture into healthy muscle, 80 to 100 per cent of the animals were protected by blood levels in excess of 0.1 units per cubic centimeter. In subsequent experiments, however, modified procedures of immunization with toxoid have gradually increased the protection to 50 to 100 per cent of animals. The presence of an unknown factor or factors which contribute to the toxemia and mortality of experimental gas infection developing in the presence of crushed muscle and dirt is suggested by these studies. A high degree of immunity is possible by the injection of toxoid against gas gangrene produced by Cl. welchii, but the duration of the immunity is undetermined. Other studies are in progress to increase and extend the degree of immunity afforded by injections of Cl. welchii toxoid and to produce similar immunization with toxoids of the other clostridia associated with gas gangrene in anticipation of the development of an effective mixed toxoid for human prophylaxis against clinical gas gangrene.

Factors Limiting Surgery for Hypertension.—According to Heinbecker, the surgical treatment of essential hypertension has been based on the concept that it is due to overaction of the sympathetic nervous system. The increased activity of the sympathetic nervous system has been pictured as causing general or local vasoconstriction and an increased secretion of epinephrine. More recently such overaction has been regarded as responsible for the constriction of the renal blood vessels, thus leading to a release of renin. The author presents evidence that a humoral mechanism, not overaction of the sympathetic nervous system, is the primary cause of essential hypertension. It is postulated that in man hypophyseal eosinophil cell overaction with a resultant trophic stimulation of the adrenal cortex as the result of functional depression of the hypothalamic nuclei innervating the neural hypophysis is the primary cause of essential hypertension. The only two organs capable of releasing humors concerned with the pathogenesis and symptomatology of hypertension and whose function can be modified by sympathectomy are the kidneys and the adrenals. Any beneficial effect to be obtained by removal of portions of the sympathetic nervous system in the treatment of essential hypertension is to be obtained when such removal results in a denervation of the adrenals and the kidneys. The removal of portions of the sympathetic nervous system more extensive than is required for denervation of the adrenals and the kidneys is unnecessary. The temporarily greater enlargement of the vascular bed effected by this means may cause a shunting of blood from the kidneys sufficient to impair their function and thereby, through the release of renin, accelerate the degenerative changes in the extrarenal blood vessels.

Archives of Ophthalmology, Chicago

38:289-414 (Sept.) 1947

- Correlations between Sensory and Motor Disturbances in Convergent Squint. F. H. Adler and F. Elizabeth Jackson.—p. 289.
- Penicillin Therapy of Experimental Infections of Lens and Vitreous with Clostridium Welchii. L. C. Hopkins.—p. 301.
- Lipemia Retinalis: Report of a Case. F. L. P. Koch and P. S. Strong.—p. 310.
- Influence of Suture on Complications Following Cataract Operation. A. de Roeth.—p. 315.
- *Ocular Involvement in Rats on Diets Deficient in Amino Acids: I. Tryptophan. A. Ferraro and L. Roizin.—p. 331.
- *Id.: II. Corneal Dystrophy Due to Valine Deficiency. A. Ferraro, L. Roizin and I. Givner.—p. 342.
- Cataract Complicating Glaucoma. G. Samuels.—p. 453.
- Treatment of Subchoroidal Hemorrhage by Posterior Sclerotomy. P. A. Duhr and C. D. Hogenson.—p. 365.
- Liability Test for Chronic Simple Glaucoma. S. Bloomfield.—p. 368.
- Modified Snellen Suture for Prolapsed Chemosed Conjunctiva. J. Laval and J. Schneider.—p. 375.
- Official Color Sense Control in Sweden. C. G. Boström and I. Kugelberg.—p. 378.

Ocular Involvement (I and II) in Rats on Deficient Diets.—Ferraro and his co-workers observed that most rats on tryptophan-deficient diets showed arrest of growth, loss of body weight, disappearance of the subcutaneous adipose tissue, alteration of fur, atrophy of the gonads and, at times, yellowish coloring of the incisor teeth with alteration of the enamel. Ocular changes in young animals included spectacle eyes, conjunctivitis, superficial vascularization of the cornea and occasionally cataractous changes in the lens. This group of animals did not live long on the deficient diet and generally died before presenting the more specific symptoms of tryptophan deficiency. In more mature rats spectacle eyes were apparent at times, but less frequently and to a lesser degree than in the younger group. However, corneal vascularization and, particularly, various degrees of cataractous changes in the lens were more constant. In adult rats, spectacle eyes and conjunctivitis were only occasionally noted, whereas vascularization of the cornea was more commonly observed. In rats maintained on a valine deficient diet the corneal changes seem to be the result of edema and progressive degeneration, leading gradually to keratinization and disorganization of the epithelial structure of the cornea. In addition, pronounced deep vascularization of the cornea is observed. Slight changes in the lens, characterized chiefly by vacuolation of the cortex, are only occasionally noted. These structural changes in the eye appear to be reversible (if treated in time), as demonstrated by notable improvement following the administration of synthetic valine to the animals on a valine deficient diet.

Archives of Otolaryngology, Chicago

46:269-426 (Sept.) 1947

- Experience of Dizziness: Psychosomatic Observations on Some Vestibular Types. R. D. Loewenberg.—p. 269.
- Speech Disorders in World War II: IX. Dysphonia. W. G. Peacher.—p. 282.
- Role of Penicillin in Management of Acute and Chronic Frontal Sinusitis. K. M. Kahn.—p. 293.
- Inhalation of Penicillin Aerosol and Penicillin-Streptomycin Aerosol in Office Practice. D. Davis.—p. 307.
- Tonsil Problem. R. Waldapfel.—p. 318.
- Nasal Sensitivity to Vasoconstrictors. R. W. Wright.—p. 330.
- Microscopic Study of Inner Ear of Ataxic Rabbit. M. V. Anders.—p. 335.
- *Melkersson's Syndrome: Report of 5 Cases, with Special Reference to Pathologic Observations. K. Kettel.—p. 341.
- Relation of Various Fungi to Otomycosis. F. T. Wolf.—p. 361.
- Otogenic Abscess of Contralateral Frontal Lobe: Report of Case. J. G. Waltner.—p. 375.
- Endoscopic Use of Biplane Fluoroscope. E. W. Hagens.—p. 382.
- Vestibular Apparatus as Organ of Sense. E. Wodak.—p. 386.
- Anesthesia for Surgical Correction of Deafness. S. G. Hershey and M. F. Jones.—p. 390.
- Tyrosine in Treatment of Common Cold. D. Darling and C. F. Baumeister.—p. 395.

Melkersson's Syndrome.—Kettel reports 5 cases of Melkersson's syndrome in 2 young men aged 16 and 18 years respectively and in 3 women between the ages of 30 and 45. This syndrome comprises chronic swelling of the face, peripheral facial palsy, which may be bilateral and which may tend to relapse, and furrowed tongue. In all the patients the disease had its onset with facial palsy before the eighteenth year. In only 1 patient did the swelling of the face occur at the same

time as the facial palsy; in the remaining 4 the paresis appeared from ten to nineteen years before the face became swollen. Some of the patients observed that the swelling began after they had been exposed to cold. In 3 of the patients the swelling was localized to the upper lip, in 2 to both the upper and the lower lip. Both clinically and pathologic-anatomically the facial palsy showed close correspondence to Bell's palsy. In 2 of the patients with bilateral palsy decompression of the facial nerve according to the Ballance-Duel method was done. While in the first patient nothing macroscopically abnormal could be demonstrated in the bone or the nerve on one side, extensive changes both of the mastoid process and the facial nerve were found on the other side. In the other patient there were no abnormal macroscopic findings in the cells of the mastoid process, the canal of the facial nerve or the nerve. During the chronic stage the swelling of the face is due to chronic edema which has all the characteristic features of angioneurotic edema. The facial palsy and the swelling of the face occur within the parts innervated by the facial nerve; it is suggested that in these patients this nerve, besides supplying the voluntary facial muscles with motor fibers, also conducts vasomotor fibers. Decreased function of the former results in facial palsy, whereas disturbance of the innervation of the latter causes neurotrophic facial edema.

Bulletin New York Academy of Medicine, New York

23:497-542 (Sept.) 1947

- Tumors of Skeletal System: Pathologic Aspects. H. L. Jaffe.—p. 497.
- Tumors of Skeletal System: Medical Aspects. A. B. Gutman.—p. 512.
- Diagnostic Procedures in Investigation of Sterility in Female: Evaluation of Clinical Importance. I. C. Rubin.—p. 519.
- Current Concepts of Fertility in the Male. R. S. Hotchkiss.—p. 533.

23:545-596 (Oct.) 1947

- Harvey Cushing's Early Training 1887-1900. J. F. Fulton.—p. 545.
- Causes of Cancer. L. Loeb.—p. 564.
- Diseases of Collagen System. P. Klemperer.—p. 581.
- Streptomycin Dosage Schedules for Clinical Use. L. Loewe and Erna Altme-Werber.—p. 589.

Journal of Immunology, Baltimore

57:101-202 (Oct.) 1947

- Dilution Phenomenon in Titration of Antivenins (Antibothropic Sera). F. W. Eichbaum.—p. 101.
- Studies on Reversibility of Antigen-Antibody Reaction: III. Relation Between Effects of Homologous Polysaccharide on Capsular Swelling and on Increased Aggregation of Sensitized Pneumococci. M. C. Morris and Helen V. Karr.—p. 115.
- Interference Between Neurotropic and Other Unrelated Viruses. A. Vilches and G. K. Hirst.—p. 125.
- Technic of Colloid Particle Agglutination. P. A. Cavelti.—p. 141.
- Chemotherapeutic Effect of Acridine Compounds in Experimental Rickettsial Infections in Embryonated Eggs. J. E. Smadel, J. C. Snyder, Elizabeth B. Jackson and others.—p. 155.
- Preparation of Highly Potent Endotoxin of Hemophilus Pertussis. J. Smolens and E. H. Flavell.—p. 173.
- Isallergic Encephalomyelitis and Radiculitis in Guinea Pigs After One Injection of Brain and Mycobacteria in Water-in-Oil Emulsion. J. Freund, E. R. Stern and T. M. Pisani.—p. 179.
- Study of Influenza Virus Vaccines by a Serum-Virus Neutralization Test and by Active Immunization. Bernice E. Eddy.—p. 195.

Journal Industrial Hygiene & Toxicology, Baltimore

29:279-358 (Sept.) 1947

- Studies on Toxicity of Inhaled Cadmium: I. Acute Toxicity of Cadmium Oxide by Inhalation. H. M. Barrett, D. A. Irwin and E. Semmons.—p. 279.
- Id.: II. Acute Lethal Dose of Cadmium Oxide for Man. H. M. Barrett and B. Y. Card.—p. 286.
- Id.: III. Pathology of Cadmium Smoke Poisoning in Man and in Experimental Animals. J. C. Paterson.—p. 294.
- Effects and Treatment of Inhalation of Cadmium Chloride Aerosols in Dog. H. E. Harrison, H. Bunting, N. K. Ordway and W. S. Albrink.—p. 302.
- Study of Industrial Exposures to Cadmium. F. Principi.—p. 315.
- Possibility of Chronic Cadmium Poisoning. Harriet L. Hardy and J. B. Skinner.—p. 321.
- Epidermal Application of Diethylene Glycol Monoethyl Ether (Carbitol) and Some Other Glycols: Absorption, Toxicity and Visceral Damage. P. J. Hanzlik, W. S. Lawrence, Jean K. Fellows, F. P. Luduena and G. L. Laqueur.—p. 325.
- Lung Retention of Quartz Dust Smaller Than One Half Micron. T. F. Hatch and V. H. Kindsvatter.—p. 342.
- Slow Dissolving, Nonirritating Salt Tablet for Use in Hot Environments. W. V. Consolazio, L. J. Pecora and T. Tusing.—p. 347.
- Control of Lead Exposure in Storage Battery Manufacture. G. S. Winn and Carroll Shroyer.—p. 351.

Journal National Malaria Society, Columbia, S. C.

6:155-218 (Sept.) 1947

- Laboratory Colonization of *Anopheles Darlingi*. M. Bates.—p. 155.
 Laboratory Colony of *Anopheles Darlingi*. G. Giglioli.—p. 159.
 Studies on Imported Malarias: 3. Laboratory Rearing of Western *Anophelines*. N. F. Hardman.—p. 165.
 Practical Laboratory Methods for Quantity Rearing and Handling of *Aedes Aegypti* Mosquitoes to be Infected with *Plasmodium Gallinaceum*. H. A. Johnson.—p. 173.
 Relative Effectiveness of Various Repellents Against *Anopheles Farauti* Laveran. B. V. Travis.—p. 180.
 *Malaria Mortality and Morbidity in United States for Year 1945. E. C. Faust, J. A. Scott and G. E. McDaniel.—p. 184.
 Automatic Siphons for Antimalarial Control of Tropical Streams. C. E. Newbold and E. Cochrane.—p. 192.
 Medical Research in Malariology in First Postwar Year, 1945-1946; Report of Committee on Medical Research. H. Beckman.—p. 206.

Malaria in United States in 1945.—The report by Faust and his associates constitutes the sixteenth consecutive annual report to the National Malaria Society on the status of malaria in the United States. Practically all the reported military malaria was acquired overseas, and much of this is now widely distributed throughout the country as relapsing vivax infection in veterans who have been discharged from service. Malaria mortality in the civilian population continues to show a satisfactory decline. Within a decade it has been reduced approximately nine tenths. Yet there are areas of hyperendemicity remaining in the Southeastern states, in the Mississippi Valley, in eastern Oklahoma and Texas, and in the lower part of the Rio Grande Valley. Most reporting of malaria cases is still inadequate. Certain states, notably those in New England, New York, Ohio and Minnesota, all of which are regarded as essentially nonmalarious, now have widely disseminated cases of malaria in military or veteran personnel. Malaria in veterans in California is also considerable in volume. This may provide a means of reestablishing malaria in areas which have been essentially free of malaria for many years.

J. Neuropathology & Exper. Neurology, Baltimore

6:311-418 (Oct.) 1947

- Histopathology of Thermoagglutination of Cerebral Cortex. M. L. Silver and A. E. Walker.—p. 311.
 Hyperplasia of Peripheral Neuroglia a Factor in Pathologic Changes in Autonomic Ganglion Cells. A. Kuntz and N. M. Sulkin.—p. 323.
 Pathology of Acute Disseminated Encephalomyelitis Produced Experimentally in Rhesus Monkey and Its Resemblance to Human Demyelinating Disease. A. Wolf, E. A. Kabat and Ada E. Bezer.—p. 335.
 *Carcinoma of Muscle Tissue as Cause of Laryngeal Paralysis. G. B. Hassin.—p. 358.
 *Sturge-Weber-Dimitri's Disease: Report of Abortive Case with Observations on Form, Chemical Nature and Pathogenesis of Cerebral Cortical Concretions. B. W. Lichtenstein and C. Rosenberg.—p. 369.
 Essential Amino-Acid Deficiency. Clinicopathologic Findings in Rats: II. Valine. A. Ferraro and L. Roizin.—p. 383.
 Perforated Duodenal Ulcer and Neoplasm of Tuber Cinereum in Newborn. J. I. Mossberger.—p. 391.
 Experimental Contrast Radiography of Peripheral Nerves. J. D. French and W. H. Strain.—p. 401.

Carcinoma Causing Laryngeal Paralysis.—Hassin reports 1 case of bilateral paralysis of the recurrent laryngeal nerve caused by a large carcinoma in the upper third of the esophagus pressing on the trachea and also on the recurrent laryngeal nerves in a man aged 69. The patient became suddenly hoarse and experienced sharp shooting pains in the right side of the head. He died eleven weeks after the onset of the complaints. Necropsy revealed invasion of the muscle tissue by cancer cells, resulting in a variety of changes in the muscle fibers, namely, swelling, fragmentation, loss of striations, liquefaction, fibrillary disruption, degeneration and necrosis. No other pathologic condition of muscle exhibits such a wealth and combination of changes as demonstrated in a muscle invaded by carcinoma. Changes in the muscles and not in the nerves may have been the real cause of the paralysis. The degenerative changes exhibited by some muscle fibers were similar to those seen in progressive muscular atrophy and, like the other changes, are to be considered of toxic and not mechanical origin. Cancer of muscle fibers differs from that of nerve fibers in involving the parenchyma; in nerve fibers the cancer cells are confined to their mesodermal sheaths.

Sturge-Weber-Dimitri's Disease.—Lichtenstein and Rosenberg report 1 case of an abortive form of Sturge-Weber-Dimitri's disease (nevoid amentia), in which superficial heman-

giomatous lesions were not demonstrable in a girl aged 15, who was classified as an idiot at the age of 7 years and who died from bacillary dysentery. The anatomic basis for Sturge-Weber-Dimitri's disease is hemangiomatous mesenchymal dysplasia in the cephalic region, the lesions being predominantly in the mesenchymal layer bordering on the ectoderm, namely, the subcutis, the submucosa of the mouth, nose and throat; the choroid coat of the eye, and the leptomeninges. In the authors' case necropsy revealed that the hemangiomatous lesions in the right occipital lobe were nests of telangiectatic veins which were engorged with blood, being limited to the overlying leptomeninges. The engorged telangiectatic veins played a part in producing venous and capillary stasis in the underlying cerebral cortex. This disturbance in circulation resulted in the depositions of concretions, which replaced large portions of the parenchyma. The concretions are generally rich in calcium or calcium admixed with iron, but in this case calcium was not found, the changes being exclusively in the nature of ferrugination rather than calcification. The concretions appeared histologically as isolated spherules, pericapillary sheaths and incrustated nerve cells. The sclerosis of the affected cerebral convolutions consisted of concretions and a diffuse increase in fibrillary glia, the latter being reactive to the concretions and secondary to the disappearance of nerve cells and the secondary degeneration of nerve fibers. These concretions appear in the roentgenogram as double contour lines outlining the cerebral convolutions. These double contour shadows seen in roentgenograms of the skull in cases of Sturge-Weber-Dimitri's disease are not specific for the disease and have been described in other disorders in which partial interference with the blood supply of the affected convolutions has occurred.

Journal of Neurophysiology, Springfield, Ill.

10:323-380 (Sept.) 1947

- Potentials from Motor Roots of Crustacean Central Nervous System. C. A. G. Wiersma and W. Schallck.—p. 323.
 Vestibular Nuclei as Excitatory Mechanism for Cord. L. M. N. Bach and H. W. Magoun.—p. 331.
 Interpretation of Spinal Cord Action Potentials in Terms of Volume Conductor Theory. G. M. Schoepfle.—p. 339.
 Study of Effects of Anesthesia and Asphyxia on Mono-Synaptic Pathway Through Spinal Cord. C. McC. Brooks and J. C. Eccles.—p. 349.
 Electroencephalogram After Prolonged Brain Asphyxiation. A. van Harreveld.—p. 361.
 Autonomic and Somatic Reactions Induced by Stimulation of Cingular Gyrus in Dogs. W. F. Kremer.—p. 371.

Journal of Nutrition, Philadelphia

34:351-469 (Oct.) 1947. Partial Index

- Quality of Diet and Consumption of Sucrose Solutions. C. M. McCay and Eva M. Eaton.—p. 351.
 *Comparative Biologic Availabilities of Ferrous Sulfate Iron and Ferric Orthophosphate Iron in Enriched Bread. H. Blumberg and A. Arnold.—p. 373.
 Self Selection of Diet: V. Appetite for Carbohydrates. E. M. Scott and Ethel L. Verney.—p. 401.
 Physiologic Availability of Vitamins: IX. Influence of Ascorbic Acid Stabilizers in Fruits and Vegetables. D. Melnick, M. Hochberg and B. L. Oser.—p. 409.
 Studies of Thyroid Toxicity: I. Nutritional Factor Which Alleviates Toxicity of Ingested Thyroid Substance. J. J. Bethell, V. D. Wiebelhaus and H. A. Lardy.—p. 431.
 Effect of Ingestion of High Levels of Riboflavin on Amount in Milk and Urine. P. B. Pearson and B. S. Schweigert.—p. 443.
 Some Studies on Nutritive Value of Butter Fatty Acids. E. Heftmann.—p. 455.

Forms of Iron in Enriched Bread.—The biologic availability of the iron in ferrous sulfate and in ferric orthophosphate has been compared on the basis of hemoglobin regeneration in rats made anemic by iron deficiency. Comparison was made also with ferric chloride. The iron compounds were fed in the form of enriched breads, and multiple levels of enrichment with iron were used to permit comparison of dosage response curves. Under the conditions of these experiments Blumberg and Arnold found that the iron in ferrous sulfate was four to five times as available as that in ferric orthophosphate when both compounds were tested at four widely spaced levels. When compared at two levels, the iron in ferric chloride was equal in biologic availability to that in the highly effective ferrous sulfate or four to five times as available as the iron in ferric orthophos-

phate. The authors stress the desirability of using highly assimilable forms of iron in the enrichment of flour and bread, so that the consumer may secure the full benefit of the enrichment program.

Journal of Thoracic Surgery, St. Louis

16:445-586 (Oct.) 1947

- Specialism in Surgery. I. A. Bigger.—p. 445.
Lipoid Pneumonia Simulating Bronchogenic Carcinoma. R. M. Jones.—p. 451.
Gastrogenous Mediastinal Cyst. L. R. Davidson and L. Brown.—p. 458.
Mediastinal Enterocystoma: Report of Case in Seven-Month-Old Child with Impending Suffocation, Operation and Recovery. N. Lindquist and H. B. Wulff.—p. 468.
Treatment of Thoracoabdominal Fistula. G. E. Lindskog and E. A. Lawrence.—p. 477.
Congenital Evagination of Diaphragm. J. D. Bisgard.—p. 484.
Pulmonary Function After Pneumonectomy and Lobectomy. G. Birath, C. Crafoord and P. Rudström.—p. 492.
Tuberculous Tracheobronchitis: Study of 500 Consecutive Cases. A. R. Judd.—p. 512.
Should Solitary Pulmonary "Metastases" be Resected? P. W. Schafer and O. B. Scott.—p. 524.
Study of Variations of Bronchopulmonary Segments in Left Upper Lobe. J. G. Scannell.—p. 530.
Experience with Thoracic and Thoracoabdominal Wounds in an Evacuation Hospital. S. A. Mackler.—p. 538.
Traumatic Rupture of Bronchus. T. J. Kinsella and L. W. Johnsrud.—p. 571.

Pulmonary Function After Pneumonectomy.—Birath and his associates point out that pneumonectomies and lobectomies raise the question of whether the remaining lung tissue can carry on the respiratory function. The authors studied 12 patients who had undergone pneumonectomy and 14 patients who had undergone lobectomy for from two to thirteen years after the operation. They found that after pneumonectomy there is somewhat less reduction in total lung volume than the corresponding loss of parenchyma. In the position of maximum inspiration the remaining lung tissue (probably also in the lobectomy cases) is therefore exposed to increased distention. The distention of the lung tissue is approximately 50 per cent greater after pneumonectomy than has previously been calculated. The gaseous elements of the blood in the state of rest as a rule do not exhibit changes. After pneumonectomy and lobectomy, dyspnea is generally stationary and not progressive. After the postoperative period, it steadily diminishes. In many instances it is surprising how little the patient is troubled by it. Twenty-three of the 26 patients had full working capacity. If emphysema develops in the course of years, it generally remains within moderate limits and does not greatly encroach on respiratory function.

Tuberculous Tracheobronchitis.—Judd says that the routine endoscopic examination of all patients who are under consideration for major surgical collapse therapy for pulmonary tuberculosis has made it possible to accumulate much information regarding tuberculous endobronchitis and tracheitis. Among the facts that have been brought to attention are the progressive nature of the changes that culminate in a strangulating stenosis and the value of treatment. Observations were made in 500 cases. The majority of patients revealed some inflammatory reaction suggesting that the severer conditions have their origin in this inflammatory process, which may end in acute stenosis or total occlusion of the airway. The fact that every tuberculous patient does not suffer such a strangulating stenosis is proof that natural resistance interrupts this chain of events in the majority of cases. In addition, bronchoscopic management will interrupt many more. The ultimate number of patients in whom strangulating stenosis develops is small. Endoscopic methods can relieve and "cure" this type of lesion in many cases. Silver nitrate in from 5 to 30 per cent solution is easily applied to ulcerating and granulomatous areas. However, in some patients the application is followed by increase in tissue edema and inflammatory change. Fairly satisfactory results can be obtained by aspirating secretions, removing granulations with the gauze applicator and applying a soothing application, such as cajeput oil ("gomenol") or monochlorophenol in mineral oil. Only endoscopic examination will provide information about endotracheobronchial conditions. The author thinks that in time all patients with advanced tuberculosis will be bronchoscoped prior to the institution of collapse therapy.

Journal of Urology, Baltimore

58:221-294 (Oct.) 1947

- Suprarenal Cortical Syndrome: Report of Case with Carcinoma of Adrenal Cortex. W. L. McLaughlin, J. P. Bowler and J. H. Folley.—p. 221.
Congenital Arteriovenous Aneurysm of Renal Artery. R. Pearse and R. L. MacMillan.—p. 235.
Anuria Following Blood Transfusion: Report of 2 Cases. N. E. Berry.—p. 239.
Transplantation of Ureters and Total Cystectomy. V. F. Marshall.—p. 244.
Artificial Sphincter: New Device and Operation for Control of Enuresis and Urinary Incontinence. F. E. B. Foley.—p. 250.
Acute Exudative Cystitis of Undetermined Etiology. J. V. Berry and N. E. Berry.—p. 260.
Reiter's Syndrome: Report of 2 Cases with Response in 1 to Large Doses of Mapharsen. E. N. Khoury.—p. 268.
Subacute Monocytic Leukemia Presenting Symptoms of Prostatism: Case Report. E. N. Lubin, T. R. Fetter and L. A. Erf.—p. 272.
Hematuria in Workmen in Aniline Dye Industry Due to 5-Chloro-Ortho-Toluidine: 6 Case Reports. J. S. Lyons.—p. 277.
Glandular Metaplastic Malignancy in Urinary Tract: Report of 4 Cases. W. E. Kittredge, J. C. Henthorne and M. Whitehead.—p. 282.
Impotence Following Trauma to Corpora Cavernosa Relieved by Cartilage Grafts: Case Report. A. A. Solomon and C. I. Karleen.—p. 289.

"Mapharsen" in Reiter's Disease.—Khoury points out that Reiter's syndrome has a basic triad of bacterial urethritis, conjunctivitis and arthritis. The general belief is that it is one of the many virus infections. Cases reported in the literature generally had a protracted course, but this is not an invariable observation, inasmuch as at least 1 of the 2 cases reported here was benign and cleared in a comparatively short time. The second case may be classed as moderately severe. However, it did cause protracted disability. Large doses of oxophenarsine hydrochloride ("mapharsen"), which were started four months after onset of the urethritis, caused such a rapid and dramatic response that the possibility of a coincidental spontaneous regression cannot be rationally entertained. The author thinks that in future cases of this syndrome this form of therapy should have a trial. "Mapharsen" was given in two injections a week for three weeks, then one injection a week for four weeks. The dose was 0.06 Gm. administered by intravenous injection.

Monocytic Leukemia Appearing as Prostatism.—Lubin and his associates report the history of a man, aged 56, who was hospitalized with symptoms of prostatism. A persistent elevation of temperature and the abnormal blood picture prompted hematologic consultation, which resulted in a diagnosis of subacute monocytic leukemia. This is the second report of a case of monocytic leukemia in which the presenting symptoms were those of prostatic urinary obstruction. The repeated episodes of complete urinary retention can be explained on the basis of recurrent exacerbations of edema of the prostate secondary to the leukemic infiltration. The authors think that if transurethral electroresection is impractical in such cases, alleviation of the obstructive symptoms may be obtained by cystostomy.

Glandular Cancer of Urinary Tract.—Kittredge and his co-workers report 4 cases of glandular carcinoma of the urinary tract, which illustrate the difficulty of determining whether an adenocarcinoma is primary or secondary in this location. In 1 case the tumor of the bladder was probably metastatic from a carcinoma of the colon. In 2 cases the adenocarcinoma probably arose from plaques of urinary tract epithelium which had undergone metaplasia to the secretory type. In 1 case metaplasia of the epithelium to the secretory type evidently occurred in an infiltrating transitional cell carcinoma.

Northwest Medicine, Seattle

46:745-826 (Oct.) 1947

- Pancreatic and Liver Function. A. J. Quick.—p. 762.
Differential Diagnosis of Jaundice. B. A. Brown.—p. 765.
Surgery of Pancreas. S. F. Herrmann.—p. 770.
Stricture of Extrahepatic Bile Ducts. W. W. Mattson.—p. 773.
Infectious Polyneuritis. G. A. Rickles.—p. 778.
Acute Benadryl Poisoning. T. H. Duerfeldt.—p. 781.

Acute "Benadryl" Poisoning.—Duerfeldt describes the case of a girl 3 years of age, who swallowed approximately fourteen to sixteen capsules (700 to 800 mg.) of diphenhydramine hydrochloride ("benadryl hydrochloride"). The dose taken orally by this girl was 50 to 60 mg. per kilogram of body weight. The symptoms paralleled manifestations of a toxic dose in laboratory animals. At first the child walked with ataxic movements and

had twitching of the face and blurred speech. Suddenly she had generalized convulsive movements, stiffened out for a few seconds and then grew limp and gray and stopped breathing. With artificial respiration her color slowly returned, the muscular twitchings of the face appearing before normal respiratory movements began. Respiratory collapse occurred four times in less than four hours. The convulsions were finally brought under control with rectal administration of ether. The ataxia gradually decreased and disappeared after four days. Repeated examinations during the following months did not reveal evidence of damage to the brain.

Plastic & Reconstructive Surgery, Baltimore

2:297-402 (July) 1947

- Total Ear Reconstruction: Preliminary Report. G. Aufrecht.—p. 297.
Estlander-Abbe Operation in Treating Secondary Harelip Deformities and Defects of Upper Lip Resulting From Cancer. V. H. Kazanjian.—p. 307.
Surgical Treatment of Paralytic Stenosis of Larynx. L. H. Clerf.—p. 326.
Compressive Suspension Splint for Severely Comminuted Fractures. J. W. Maliniac.—p. 331.
Use of Open Jump Flaps in Lower Extremity Repairs. B. Cannon, C. E. Lischer, W. B. Davis and others.—p. 336.
*Successful Homologous Skin Grafting in a War Burn Using an Identical Twin as Donor. J. M. Converse and G. Duchet.—p. 342.
Method for Restoration of the Cilia of Eyelids. W. W. Schuessler and G. A. Filmer.—p. 345.
Blood Circulation in Pedicle Flaps: Preliminary Studies on a Photo-Electric Test for Determining Its Efficiency. B. Douglas and G. A. Millikan.—p. 348.
Useful Procedures in Plastic Surgery. G. W. Pierce, E. H. Klabunde and V. L. Bergeron.—p. 358.
Plastic Operative Procedure for Repair of Large Circular or Elliptical Body Surface Defects. B. Hadjistamoff.—p. 362.

Homologous Skin Grafting with Identical Twin as Donor.—Converse and Duchet point out that under the present status of knowledge it is impossible to assure homologous skin transplantation between individual human beings of ordinary genetic diversity. They describe the successful grafting of homologous skin in a case in which the patient's identical twin served as donor. The homografts were used to complete the covering of an area of full thickness skin loss following a war burn. The behavior of the homografts did not differ in any way from that of previously applied autografts. This case confirms previous reports on the success of skin grafting between identical twins.

Radiology, Syracuse, N. Y.

49:399-528 (Oct.) 1947

- Clinical Diagnosis of Carcinoma of Cervix. A. N. Arneson.—p. 400.
Pathologic Aspects of Carcinoma of Cervix Uteri. W. J. Siebert.—p. 403.
Carcinoma of Cervix: Surgical Aspects. J. I. Brewer.—p. 404.
Intracavitary Radium Therapy for Carcinoma of Uterine Cervix. H. H. Bowing.—p. 406.
Interstitial Radium Therapy in Carcinoma of Cervix. G. W. Waterman.—p. 411.
Transvaginal Roentgen Therapy in Carcinoma of Cervix. J. A. del Regato.—p. 413.
Five-Year End-Results in Treatment of Carcinoma of Uterine Cervix. E. L. Jenkinson, E. L. Pirkey and F. J. Hamernik.—p. 415.
Improved Methods of Intravaginal Roentgen and Radium Therapy in Carcinoma of Cervix. E. C. Ernst.—p. 425.
Giant Cell Tumors of Bone. F. B. Bogart and A. E. Imler.—p. 432.
*Malignant Tumors of Small Intestine. H. P. Doub.—p. 441.
Further Observations with Intravaginal Roentgen Therapy of Cancer of Female Pelvis. W. W. Wasson and R. Greening.—p. 452.
Dosage Calculations for Various Plans of Intravaginal X-Ray Therapy. J. F. Nolan and W. Stanbro.—p. 462.
Diverticula of Foregut. D. Wheeler.—p. 476.
Medical, Biologic and Industrial Applications of Monochromatic Radiography and Microradiography. G. L. Clark.—p. 483.

Malignant Tumors of Small Intestine.—Doub says that although malignant tumors occur less frequently in the small intestine than in other parts of the gastrointestinal tract they are no longer considered as rare as they were in the past. In a review of observations in 52 cases he stresses that the highest percentage of malignant neoplasms of the small bowel are adenocarcinomas. Lymphosarcomas are second in numerical order and carcinoid tumors a poor third. Grossly, the tumors are of two types: constricting and fungating, or polypoid. The constricting type produces mechanical obstruction by narrowing the intestinal lumen; in the polypoid type obstruction is due to the bulk of the

tumor or to intussusception. The clinical picture is usually one of a progressive loss of weight and strength and varying degrees of anemia. Pain is a prominent symptom. A change of bowel habit is usually present, and this may progress to an acute obstruction for which the patient seeks relief. A palpable tumor is an important and significant finding. Distention is often present. Unusual peristaltic activity is common. The roentgen picture may reveal an area of narrowing of the lumen of the bowel and dilatation proximal to it. Marginal or central filling defects may also be present, with obliteration of the mucosal markings in the involved area. Varying degrees of obstruction of the duodenum and stomach are commonly found associated with duodenal tumors. In the periampullary type jaundice, often of an intermittent character, is a prominent feature. The symptoms and roentgenologic signs of jejunal and ileal tumors are similar. In these areas the clinical syndrome is usually that of obstruction. The symptoms may be acute and constitutional in the case of intussusception or gradual in the case of a slow growing tumor. Loss of weight and strength combined with anemia and a palpable abdominal tumor are suggestive signs.

Urologic & Cutaneous Review, West Palm Beach, Fla.

51:559-620 (Oct.) 1947. Partial Index

- Transurethral Management of Pathology of Female Urethra. S. H. Bassow.—p. 559.
Urinary Incontinence Due to Ectopic Ureteral Orifice with Cure by Heminephrectomy: Case Report. A. J. Greenberger, M. E. Greenberger and A. K. Swersie.—p. 563.
Supplementary Report on Combined Gynecologic-Urologic Management of Vesicovaginal Fistula. W. J. Reich, J. L. Wilkey and M. J. Nechtow.—p. 566.
Complications of Endovesical Ureterotomy. R. Cowen.—p. 568.
*Ambulatory Intensive Treatment of Syphilis with Calcium Penicillin in Oil and Wax: Second Report. R. A. Koch.—p. 569.
Prostitution in Japan in Early Years of This Century. S. C. Martin.—p. 574.
*Marrow Aplasia and Estrapenia in Pemphigus Vulgaris: Case Report with Autopsy Findings and Notes on Relationship of Erythroid Marrow Function to Atopic-Exudative Skin Lesions. R. D. Barnard.—p. 586.

Calcium Penicillin in Syphilis.—Koch treated 279 patients with early syphilis by daily intramuscular injections of calcium penicillin in oil and 4.8 per cent beeswax for ten days at the San Francisco City Clinic during the period August 1945 to April 1947. Treatment consisted of two administrations of 150,000 units (0.5 cc.) of penicillin, one in the morning and one in the evening, making a total of 3,000,000 units of the drug for the entire treatment schedule. Of the 279 patients treated, 238 (85.3 per cent), 169 men and 69 women, completed the course of treatment. Thirty-five failed to complete the course for various reasons, and 6 of the patients are still under treatment. Eighteen patients displayed reactions, but in only 3 patients were these sufficiently severe to necessitate discontinuance of penicillin treatment. Of the 238 patients, 140 had primary syphilis and 98 had secondary syphilis. Sixty-eight of the 140 and 26 of the 98 attained seronegativity and were followed for periods varying from less than three months to more than eighteen months. One hundred and eighty-one of the 238 patients were followed from one to eighteen months. The failure rate of these cases was 10.5 per cent, and the failure rate based on 136 cases followed from three to eighteen months was 14 per cent. A combination of this method of treatment with arsenicals and bismuth compounds has been recommended for use in the physician's office.

Pemphigus Vulgaris.—Barnard reports 1 case of pemphigus vulgaris in a man aged 77; estrapenia, i. e., diminution in blood cholinesterase, and erythrophthisis were demonstrated at necropsy. It is suggested that the manifestations of pemphigus may be due to erythroid marrow depression, failure of cholinesterase synthesis and cholinergic intoxication. Fatal pemphigus may be classified along with the acute forms of malignant leukoses as an atopic exudative shock state. The bone marrow must be regarded as the crucial shock organ. On the basis of its presumed pathogenesis, blood transfusion appears to be the rational keystone in the treatment of pemphigus. Penicillin and arsenic therapy would appear to be useful. Radiation therapy may give the death blow to an erythroid marrow struggling for existence; this treatment is interdicted in all estrapenic conditions and would appear to be contraindicated in pemphigus.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

22:129-192 (Sept.) 1947

- Study of Burns and Scalds in Children. Brenda Morrison.—p. 129.
Excretion of 17-Ketosteroids and Gonadotrophin in Children: Normal and Abnormal Cases. A. M. Hain.—p. 152.
Medico-Social Problems Involved in Child Adoption. H. P. Tait.—p. 159.
*Absorption in Primary Tuberculous Infection in Childhood. S. Graham and J. H. Hutchison.—p. 162.

Absorption Collapse in Tuberculosis.—Graham and Hutchison show that drainage from the primary focus of tuberculosis takes place via the peribronchial lymphatics to the regional lymph nodes. Tuberculin skin tests are positive. A follow-up of positive reactors has revealed a varied course. By far the greatest number proceed to healing. Certain phenomena occasionally appear which are regarded as due to allergy, namely, erythema nodosum and phlyctenular conjunctivitis. Bronchogenic spread producing tuberculous bronchopneumonia and hematogenous spread producing miliary tuberculosis and tuberculous meningitis with rare exceptions end in death. The authors discuss the condition accompanied by extensive radiologic changes in the lungs which has been designated as epituberculosis. Various explanations have been attempted for this condition. The authors incline to the one which assumes that such lesions are due to the pressure of the tuberculous regional lymph nodes on the adjacent bronchi; the pressure produces various degrees of occlusion, which in turn leads to collapse of the corresponding lobe or sector (absorption collapse). Evidence in favor of this theory is presented. A number of illustrative case histories are given, and the authors stress that absorption collapse due to bronchial occlusion is of common occurrence in primary tuberculous infection in children. In some cases of incomplete bronchial occlusion, obstructive emphysema may result. The term "epituberculosis" applied to this condition is a misnomer, and the suggestion that the shadow seen in the radiograph indicates a perifocal reaction of an allergic nature is not justified. It might be suggested that in a child in whom a bronchus is occluded by a mass of tuberculous granulation tissue containing virulent tubercle bacilli bronchoscopy is contraindicated, and that the removal of the tuberculous granulation tissue via the bronchoscope might be followed by a rapid spread of the infection and the death of the patient. Such does not seem to be the case. Failure to bring about expansion of the collapsed lung may result in the development of bronchiectasis. Further observations on the final results obtained by bronchoscopy and removal of the obstruction compared with results in those not so treated are urgently required.

British Journal of Radiology, London

20:393-440 (Oct.) 1947

- Developing Years of Physics in Medicine. S. Russ.—p. 393.
Micro-Arteriography. A. E. Barclay.—p. 394.
Optimal Skin Tolerance Dose Levels. B. Jolles and R. G. Mitchell.—p. 405.
Some Factors in Etiology of Osteochondritis of Spine: Report on 2 Families. F. H. Kemp and D. C. Wilson.—p. 410.
*Tomography of Spine in Tuberculous Disease. F. G. Wood and M. C. Wilkinson.—p. 418.
Radiologic Features of Vesical Leiomyoma and Leiomyosarcoma: Case Report. E. Samuel.—p. 423.
Two Cases of Lipomatosis Involving Bone. S. F. Oosthuizen and J. Barnetson.—p. 426.
Neuroepithelioma of Stomach. H. W. Gillespie.—p. 433.

Tomography in Tuberculosis of Spine.—According to Wood and Wilkinson, although ordinary anteroposterior and lateral radiographs are useful in defining the extent and progress of tuberculosis of the spine, there are situations in which such roentgen examination is made difficult by the intervention of structures that overlap and obscure the part to be viewed. Tomography is of special value in such regions. It is also of use in obtaining better definition of tuberculous foci in the spine. In 1 of the patients studied by the authors tomography made possible the accurate demonstration of the site of origin of the tuberculous sinus and the operative approach. In tuberculous paraplegia it is difficult to assess the integrity of the spinal

canal by the ordinary anteroposterior and lateral films without the aid of tomographs. The authors cite cases and reproduce tomographs to show the value of tomography in the presence of tuberculous disease in the upper cervical, cervicodorsal and lumbosacral regions. They discuss tomography in relation to tuberculous paraplegia.

British Medical Journal, London

2:559-598 (Oct. 11) 1947

- *Penicillin in Neurosyphilis. C. Worster-Drought.—p. 559.
Modern Treatment of Neurosyphilis. F. G. Lescher and H. R. M. Richards.—p. 565.
Primary Meningococcal Ophthalmia. F. N. Shuttleworth and J. G. Benstead.—p. 568.
Biochemistry of Senescence. C. P. Stewart.—p. 569.
Apparatus for Drainage of a Temporary Ileostomy. R. M. T. Walker-Brash.—p. 572.
Six Cases of Cardiovascular Disorder with Peripheral Neuritis. E. Leigh and A. R. Hazelton.—p. 573.

Penicillin in Neurosyphilis.—Worster-Drought employed sodium penicillin in aqueous solution. He thinks that a total dosage of at least 3,000,000 units of the drug should be given to patients with neurosyphilis and that in parenchymatous neurosyphilis the total dosage should reach 4,000,000 to 5,000,000 units. Intramuscular injection is the best method of administering penicillin. The intravenous route (either by continuous drip or by repeated single injections) has little to commend it. There is no evidence that the intrathecal administration of penicillin is of greater therapeutic value. Because of the reactions and the various additional risks, intrathecal injection of penicillin is best avoided in most cases of neurosyphilis. Owing to the risk of possible Herxheimer-Jarisch reactions following the first doses of penicillin, all patients with neurosyphilis should receive an initial series of injections of a bismuth compound. In meningeovascular neurosyphilis the course of penicillin should be followed by arsenic and bismuth therapy. General paresis is best treated with an initial course of 4,000,000 to 5,000,000 units followed by full malarial or fever therapy (10 to 12 malarial rigors). The usual courses of arsenic and bismuth are advisable until the serologic reactions become negative. In cases of dementia paralytica (and taboparesis) in which malarial or fever therapy is contraindicated by reason of cardiovascular disease, one must rely on penicillin alone. Some improvement, but not cure, can be expected. Tabes dorsalis is best treated first with penicillin and then with arsenicals and bismuth preparations. In primary optic atrophy of syphilitic origin treatment should consist of an initial course of 4,000,000 to 5,000,000 units of penicillin followed by malarial therapy and afterward arsenic and bismuth therapy. Observation of patients must extend to five years or longer before success can be claimed for any treatment.

Journal of Laryngology and Otology, London

61:567-608 (Nov.) 1946

- *Labyrinthine Fenestration—Present Position. C. A. Hutchinson.—p. 567.
Acute Otitis Externa in India. J. V. Clark.—p. 586.
Congenital Abnormalities of Pillars of Fauces and Action of Posterior Pillars and Nasopharyngeal Valve During Speech. M. C. Oldfield and I. P. J. Macnaughtan.—p. 594.
Considerations Regarding Secondary After Sensations Caused by Stimulation of Semicircular Canal System: Some Remarks on Paper of L. B. W. Jongkees and J. J. Groen. E. Wodak.—p. 601.
Hemorrhage from Internal Carotid Artery Following Pharyngeal Abscesses. E. C. Richardson.—p. 604.

Labyrinthine Fenestration.—Hutchinson favors the one stage posterosuperior operation under general anesthesia with gas-oxygen-trichloroethylene and with adoption of the operating microscope. Free and tangential access is provided by the posterosuperior approach in contrast to the vertical and restricted access afforded by Lempert's transmeatal approach. The actual fenestration itself is performed in a continuous controllable stream of isotonic sodium chloride solution to which a few drops of epinephrine have been added. The most suitable patient for operation is the young, intelligent adult between the ages of 20 and 30, with audiograms showing a flat conduction curve of more than 30 decibels and more or less good bone conduction hearing. Systematic treatment should be practiced both before and after surgical intervention. Vertigo may or may not occur;

its duration is usually short and the response to treatment with phenobarbital is satisfactory. The patient gets up about the sixth day and leaves the hospital about the twelfth to fourteenth day on the average. At the first dressing on the eighth post-operative day hearing may be as poor or poorer than it was before operation; about the end of another week it usually begins to improve, and it reaches its peak in two to six months. There is a fifty-fifty chance of a 25 to 35 decibel improvement in hearing, and such improvement if retained for two years will be permanent. The careful selection of cases, the thorough preliminary drilling of the theater team, the orthopedic preparation of the patient, a completely adequate armamentarium, the most rigidly aseptic operative and postoperative technic and meticulous attention to detail at operation are all factors of importance if success is to be attained. Since closure of the fenestration as the result of osteogenesis may occur up to two years from the date of operation in some 10 per cent of cases regardless of what steps are taken to prevent it, this period of time should be allowed to elapse in every instance before attempting to assess the permanent degree of success.

Journal of Pathology and Bacteriology, Edinburgh

59:1-358 (Jan.-April) 1947. Partial Index

- Atypical Amyloidosis in Case of Plasma-Cell Myelomatosis. J. H. Fodden.—p. 29.
 Behavior of *Salmonella Typhi* in Agglutination Reaction. W. Hayes.—p. 51.
 Activation of Hemagglutinins by Human Serum. Kathleen E. Boorman and Barbara E. Dodd.—p. 95.
 On Certain Properties of Antisera Prepared Against Human Serum and Its Various Protein Fractions: Their Use in Detection of Sensitization of Human Red Cells with "Incomplete" Rh Antibody, and on Nature of This Antibody. R. R. A. Coombs and A. E. Mourant.—p. 105.
 Penicillin and B. Anthracis. J. M. Barnes.—p. 113.
 Carcinoma of Pituitary Gland with Metastases to Liver in a Case of Cushing's Syndrome. W. Forbes.—p. 137.
 Hemolytic Activity of *C. Diphtheriae*. L. F. Hewitt.—p. 145.
 Effect of Asbestos on Tissue Cultures: Comparative Study with Quartz and Coal Dust. T. H. Belt, I. Friedmann and E. J. King.—p. 159.
 Immunologic Aspects of Experimental Haemophilus Pertussis Infection. H. Proom.—p. 165.
 Case of Idiopathic Methemoglobinemia Treated by Ascorbic Acid and Methylene Blue. E. J. King, J. C. White and M. Gilchrist.—p. 181.
 Isolation and Cultivation of Variola Virus on Chorio-Allantois of Chick Embryos. A. W. Downie and K. R. Dumbell.—p. 189.
 Cytoplasmic Basophilia of Bone Marrow Cells. J. C. White.—p. 223.
 Sensitivity of Organisms of Genus *Leptospira* to Penicillin and Streptomycin. J. A. H. Wylie and E. Vincent.—p. 247.
 Some Characters of Coagulation Necrosis Due to Mustard Gas. B. D. Pullinger.—p. 255.
 Adrenal Tumors and Pseudo-Hermaphroditism: Hormone Study of Cases. A. M. Hain.—p. 267.
 Sensitivity of *Leptospirae* to Penicillin and Streptomycin.—Wylie and Vincent tested twenty-nine strains of *leptospirae* in vitro against penicillin and streptomycin. In the concentrations tested both antibodies partially or completely inhibited all the strains; there was considerable variation in susceptibility between species, but most of the common pathogens were completely inhibited by 0.5 unit per cubic centimeter or less. Strain variation in resistance was shown within the species *Leptospira icterohemorrhagiae*. On the whole, on a weight basis, penicillin was more inhibitory than streptomycin.

Lancet, London

2:531-566 (Oct. 11) 1947

- Social Class and Fetal Mortality. D. Baird.—p. 531.
 Hypoglycemia Following Partial Gastrectomy: Report of 3 Cases. C. G. Barnes.—p. 536.
 Tuberculous Rheumatism: Report of Case. R. J. T. Woodland.—p. 540.
 Effect of Beta-Chloroethylamine Hydrochlorides in Leukemia, Hodgkin's Disease, and Polycythemia Vera: Report on 18 Cases. J. F. Wilkinson and F. Fletcher.—p. 540.
 Rhesus Antigen C^w Causing Hemolytic Disease of Newborn. Sylvia D. Lawler and J. J. van Loghem.—p. 545.

Beta Chloroethylamine Hydrochlorides in Leukemia.—Wilkinson and Fletcher describe the results of treatment with intravenous halogenated alkylamine (nitrogen mustard) in 18 cases of chronic myeloid and lymphatic leukemia, Hodgkin's disease and polycythemia vera. Diagnosis was confirmed by biopsy of lymph nodes or of sternal marrow. The most beneficial effects were observed in chronic myeloid leukemia, though dramatic improvement also occurred in Hodgkin's disease.

There was considerable variation in the response to treatment in individual cases in all groups, but the least satisfactory results were obtained in chronic lymphatic leukemia. A dosage of 0.1 to 0.2 mg. per kilogram of body weight was adopted, and tris (beta-chloroethyl)amine hydrochloride was the compound of choice. Undesirable toxic effects were avoided by hematologic control and a safe technic of administration. The two alkylamines do not appear to cure leukemia or the other conditions mentioned, but in some cases they give relief by reducing the total white blood cell count, with a resultant improvement in the anemia. In other cases embarrassing enlargements of the lymph nodes, liver and spleen disappear, leading to an increased feeling of well-being. Improvement is seldom maintained, and the patient's response to this treatment appears to diminish after repeated injections. It may be an advantage to use some form of combined therapy or to give different preparations of varying activity on the hemopoietic organs at certain stages of the disease.

Rhesus Antigen C^w and Hemolytic Disease of the Newborn.—Lawler and van Loghem point out that a rare Rh antigen, C^w was described by Callender and Race in 1946. A patient responded to blood transfusions by making a succession of "new" antibodies. One of these antibodies was called anti-C^w. Two of the donors were eventually recognized as being C^wDe/CDe. C^w is a form of antigen alternative to C or c; it occurs in the bloods of about 2.5 per cent of English persons. The authors report a second example of anti-C^w. In this case the Rh antibody, anti-C^w, resulted from immunization by pregnancy and caused hemolytic disease of the newborn. The mother had never received a transfusion, but her first child had been jaundiced for a month. It recovered, however. A second infant died on the third day from icterus gravis. A year later a macerated fetus was stillborn. This was followed by a miscarriage during the fourth month. Another infant died from icterus gravis neonatorum, and the last infant, born in June 1947, died of erythroblastosis fetalis. The mother's serum, taken after the birth of the last child, agglutinated the cells of both father and baby. The blood groups of the family at first appeared to be compatible in all respects. Nevertheless the presence of the antibody and the history, which was typical of hemolytic disease, strongly suggested that Rh incompatibility must be present. The samples of blood from both mother and father were then tested against the serum of the Oxford patient containing the original anti-C^w agglutinin. The antigen C^w was found in the father's blood but not in the mother's; thus an Rh antigen incompatibility was disclosed. The antibody in the mother's serum was then proved to be anti-C^w by testing its reactions with a panel of cells of laboratory workers previously tested with the Oxford serum.

Medical Journal of Australia, Sydney

2:349-380 (Sept. 20) 1947

- Management of Hand Injuries. F. H. McC. Callow.—p. 349.
 Management of Hand Injuries, Especially Treatment of Injuries to Bones and Joints. L. J. Woodland.—p. 351.
 Pelvic Inflammation. R. F. Matters.—p. 354.
 Infection with *Salmonella* Glegdam Amongst Natives of New Guinea: Account of 14 Cases with Post-Mortem Reports of 4 Fatal Cases. H. I. Jones and F. Fenner.—p. 356.

Management of Hand Injuries.—Woodland pleads for recognition of the seriousness of injuries to the hand and digits. Mangled fingers and hands result in more permanent deformities than major fractures of the large bones, and injuries to the hand and fingers result in far greater economic loss to the patient. The annual report of the Workers' Compensation Commission of New South Wales for the year 1944-1945 shows that there were 86,906 cases of compensated injury. Of these injuries, 26,862 (31 per cent) involved either the digits or the hand. After analyzing the location and nature of hand injuries, the author discusses the 2 commonest injuries of bones and joints of digits, fracture of the index finger and sprains of the thumb. Sepsis of the hand and treatment of stiff fingers is also discussed. He stresses that in addition to the uniform adoption of the improved technic in the treatment of fracture of bone and joints of the hands, more hospital beds and facilities for remedial occupational therapy in workshops are necessary before the disability rate will be lowered.

Acta Chirurgica Scandinavica, Stockholm

96:1-96 (Sept. 10) 1947

- Solitary Neurinoma of Small Intestine. W. Möller.—p. 1.
Intrathoracic Gastric Cyst. J. C. Christoffersen.—p. 12.
Surgical Aspect of Acute Hepatitis. E. Bergenfeldt.—p. 17.
Anorectal Malignant Melanomas: Clinical Study Based on 2 Cases. O. Müller.—p. 39.
Value of Postoperative "Dicumarol" Prophylaxis at "Early Rising." S. Borgström.—p. 47.
Appendicitis Material at Karolinska Sjukhuset 1940 to 1944. T. Ekström.—p. 62.
Clinical Significance of Study of Supraclavicular Lymph Nodes in Cancer. E. Jakobson.—p. 75.
Two Cases of Primary Suppurative Psoas Myositis. E. E. Vuori.—p. 87.

Acute Hepatitis.—Bergenfeldt operated on 7 patients with acute hepatitis, 4 men and 3 women between the ages of 42 and 58, in whom jaundice was refractory to medical treatment. Surgical intervention consisted of perfusion of the biliary passages with contrast medium for cholangiography supplemented by perfusion with isotonic sodium chloride solution in certain cases. The jaundice disappeared rapidly and the patients recovered. Relapses did not occur, and all the patients were in good health on follow-up examination up to three years and nine months after the operation. It is suggested that a relative obstruction was caused in the lower part of the common bile duct by an accumulation of tenacious mucus and cohesion of the mucosal surfaces. The hepatitis is accentuated by the impeded flow of bile, which is under subnormal pressure due to the hepatitis; the pressure drops still further, and a vicious circle develops. This is broken by the surgical intervention. The relative obstruction of the common bile duct must be considered not as the cause but as the result and complication of the hepatitis. The biliary passages of a patient who died of acute hepatitis were perfused during necropsy; a firm plug of mucus was expelled from the duodenal papilla, followed by large quantities of mucus. Similar observations were made in the post-mortem of a pig which had died of acute hepatitis. The results of the serum citric acid test and the serum phosphatase test also support the author's concept. Surgical treatment is recommended in doubtful cases in which differential diagnosis of hepatitis from obstructive icterus may be difficult and in certain cases of hepatitis in which severe icterus has persisted for weeks or months. Surgical intervention should consist in cleansing the biliary passages; this may be achieved by perfusion.

Postoperative "Dicumarol" Prophylaxis.—Borgström divided 1,831 patients, 900 men and 931 women between the ages of 25 and 85 years, who were operated on at the surgical clinic in Lund during 1946, into two groups. Nine hundred and forty patients with odd numbers were to be given "dicumarol" therapy provided that this was not contraindicated, while 891 patients with even numbers were to serve as controls, being treated only by early ambulation. Only 701 (337 men and 364 women) of the 940 patients were treated with "dicumarol" while 1,130 (563 men and 567 women) were not. These two groups were comparable as to age, operative intervention, time in bed postoperatively and weight. The two latter factors were examined only in patients operated on for appendicitis, hernia and cholelithiasis. Patients with transvesical prostatectomy have not been included because of their greater age (68 at an average) and the high incidence of thromboembolism among these patients. By dividing the material according to sex, no difference was observed in the incidence of thromboembolism among the men treated with "dicumarol" and those of the control group, while the incidence of thromboembolism was definitely lower among the women treated with "dicumarol" and those not so treated. This applies to the statistics based on the whole group of 940 patients compared to those based on the 701 patients. In addition it was demonstrated that the risk of bleeding associated with postoperative "dicumarol" therapy is insignificant and that the incidence of fatal pulmonary embolism has been definitely reduced. Postoperative "dicumarol" prophylaxis is suggested for women at postoperative early rising, while for men this prophylaxis seems to be without demonstrated value. A possible decrease in the incidence of fatal pulmonary embolism should, however, be emphasized.

Appendicitis.—Ekström reports 2,349 cases of appendicitis in 1,654 men and 695 women. The mortality for the whole group was 0.38 per cent $\pm$ 0.01 per cent. Sixteen hundred and four of these patients were operated on for acute appendicitis. The percentage of perforations (7.4) was unusually low and may be related to the fact that the patients came from a large urban population and had been admitted to the hospital early after the onset. This may also account for the low mortality of 0.44 per cent $\pm$ 0.16 per cent in this group. Postoperative chemotherapy may have played an additional part. Temperature, blood sedimentation rate and white blood cell count were of secondary aid to diagnosis. Nineteen of 33 patients with appendical abscess were operated on; treatment consisted of drainage in 17 and of appendectomy in 2. Conservative treatment was practiced in the others, for whom an appendectomy was advised at a later time. Death resulted from cardiac decompensation in 1 patient aged 73. Four hundred and forty-nine patients with noninflamed appendixes were operated on because of diagnosis of acute appendicitis. The commonest cause of the erroneous diagnosis was intestinal infection of various types. Women were in a significant majority (68 per cent), perhaps because intestinal disturbances are more frequent among women. One death occurred in this group, but it was not related to the operation. Two hundred and sixty-three patients with chronic appendicitis underwent operative intervention. Four-fifths of the patients were women. In 20 per cent the appendix was normal. Follow-up studies showed that 187 (83 per cent) were completely free from all abdominal symptoms. The best results were obtained in the cases of active chronic inflammation of the appendix and in cases with a typical history; in this group no deaths occurred among those who submitted to operation.

Acta Medica Scandinavica, Stockholm

128:509-603 (Sept. 22) 1947. Partial Index

- Treatment of Postdiphtheritic Polyneuritis with Vitamin B₁. J. Bøe.—p. 509.
Examination of "Diodrast" Clearance and Tubular Excretory Capacity in Man by Means of Two Single Injections of "Diodrast" (Umbradil). B. Josephson.—p. 515.
Boeck's Sarcoid with Erythema Nodosum as an Initial Symptom: Report of a Case. C. J. Bjerkelund.—p. 538.
Pathophysiologic and Clinical Aspects of Crises of Asthma Bronchiale: I. Pulmonary Ventilation, Oxygen Uptake and Blood Pressure. H. Coldahl.—p. 551.
Concept of Renal Thresholds. J. A. Barclay, W. T. Cooke and R. A. Kenney.—p. 578.
Bilateral Pneumothorax in Cases of Diphtheria in Which Tracheotomy Was Performed. J. Bok and J. B. Mullers.—p. 584.

Vitamin B₁ in Postdiphtheritic Polyneuritis.—Bøe points out that since vitamin B₁ has given excellent results in the polyneuritis of beriberi it has also been tried in other forms of polyneuritis, although in these the indications for its use are not so definite. In the course of an epidemic of diphtheria with many toxic cases, an investigation was undertaken to ascertain the extent to which thiamine can prevent polyneuritis and whether large doses of this vitamin, given when polyneuritis had appeared, could have any influence on the course of the disease. Of 80 patients with toxic diphtheria every other one was treated with thiamine, the alternate patients serving as controls. The patients receiving vitamin B₁ were given 3 mg. daily by mouth, and as soon as signs of polyneuritis appeared they received a supplementary dose of 25 mg. of vitamin B₁ given daily by injection for five days. After ten days without therapy a new series of five injections of 25 mg. each was given. These injections for five days with ten day intervals were repeated as long as the patient remained in hospital. With this dosage vitamin B₁ appeared to have no effect whatever on the polyneuritis. Complications appeared just as often, just as early, and lasted just as long in the vitamin treated group as in the control group. There would seem to be little evidence in support of the employment of vitamin B₁ in postdiphtheritic polyneuritis.

"Diodrast" Clearance and Tubular Excretory Capacity.—Josephson reviews several technics of determination of renal "diodrast" clearance and of renal tubular excretory capacity for "diodrast" (iodopyracet injection U. S. P.), pointing out their shortcomings. Since 1942 he used a method, which he found comparatively convenient and reliable, consisting of a combina-

tion of two injections for the determination of renal plasma flow and tubular excretory capacity. The "diodrast" clearance is studied after one single intragluteal injection of the contrast medium and the tubular excretion capacity after one subsequent single intravenous injection.

Archivio Italiano di Chirurgia, Bologna

69:171-238 (Fasc. III) 1947. Partial Index

*Tuberculosis of Thyroid: 2 Cases. G. Coggi.—p. 223.

Tuberculosis of Thyroid.—The condition is rare. The subjects of Goggi's report are 2 women aged 26 and 58 years, respectively. The youngest patient had healed pulmonary tuberculosis. A cold abscess developed within a thyroid adenoma secondary to healed pulmonary disease. Treatment consisted of partial thyroidectomy. The older patient was suffering with tuberculosis of the tibia and of the tarsal bones. Thyroidectomy was contraindicated because of the acute degree of infiltration of the perithyroid tissue. Treatment consisted of transsection of the thyroid tumor and use of filiform drains for two months. In both cases the diagnosis of tuberculosis of the thyroid was verified by histologic studies of the removed tissue and biologic tests.

Bruxelles-Médical, Brussels

27:2265-2322 (Oct. 19) 1947

Role of Physical Therapy in Infections of Hand. P. Bauwens.—p. 2275.

*Antithyroid Action of Estrone. J. Lederer.—p. 2290.

Antithyroid Action of Estrone.—According to Lederer, goiter is much more frequent in women than in men, the ratio being about 9:1. Numerous studies have revealed a close functional relation between thyroid and ovary. Goiter and hyperthyroidism often occur following decisive changes in the genital sphere of women, at the time of puberty, pregnancy, menopause and castration. Accordingly, it was decided to try estrone in the treatment of those cases of hyperthyroidism that were associated with suppression of the ovarian function. The author presents the histories of 4 women with exophthalmic goiter in whom large doses of estrone were given. In 2 of them the hyperthyroid condition developed following castration and in 2 others during the menopause. In those who had undergone castration, 25 mg. of estradiol benzoate was injected during the first week; during the succeeding two weeks 20 mg., and after that 15, 10 and 5 mg. of the drug were injected weekly. The women of menopausal age at first were given two weekly intramuscular injections of 5 mg. of estradiol benzoate; then this dose was given once every week and finally once in two weeks. As a result of this treatment the patients improved rapidly. They gained in weight, the basal metabolic rate and the pulse rate decreased, the goiter diminished considerably and the exophthalmos regressed.

Chirurg, Würzburg

17/18:1-48 (Oct.) 1946. Partial Index

Essential Simplification of "Plastic of Perthes" in Paralysis of Radial Nerve. K. H. Bauer.—p. 1.

Safe Closure of Aboral Stump of Stomach in Finsterer's Excision for Exclusion. O. Kleinschmidt.—p. 6.

Physiology of Muscle Applied to Bone Fracture, Its Healing and Treatment. E. Rehn.—p. 14.

"Ventrifixation-Disease." H. H. Schmid.—p. 19.

Internal Anastomosis in Treatment of Cyst of Pancreas. E. König.—p. 24.

*Successful Treatment of Severe Air Embolism by Puncture of Ventricle of Heart. W. Lembcke.—p. 31.

Severe Air Embolism.—Lembcke reports 1 case of severe air embolism which occurred during skin suture after strumectomy in a woman aged 33. The clinical aspect resembled that of asphyxia. The patient was unconscious, the pupils did not react, the reflexes were absent. Peroral intubation demonstrated that the air passages were free. Circulatory and respiratory analeptics were ineffective, and only temporary improvement in the cadaverous discoloration of the skin resulted from the administration of oxygen. The presence of bloody foam was revealed by puncture of the right ventricle by means of a thin cannula. The foam was sucked off with an airtight syringe. The puncture was repeated three times. The first punctures resulted in only temporary improvement of circulation and respiration, and the patient remained unconscious. The third time the cannula was left in the right ventricle for ten minutes and air and foam

were sucked off repeatedly. The pupils began to react, the pulse became less rapid, the cadaverous color of the skin changed to mild cyanosis and consciousness was restored in twenty minutes. It is suggested that the air embolism resulted primarily from disturbance of the air exchange depending on an obstruction of the blood current between the right heart and the capillaries of the lungs. The right ventricle, the pulmonary artery and part of the capillaries of the lung were obstructed by the air that had entered the circulation. Small amounts of blood still reached the lungs, but the blood supply of the various organs was insufficient, thus causing a severe decrease in function. The heart which is filled with air beats "in vain." This combined with the insufficient supply of blood to the heart and the organs would result in the cessation of the circulation. The only effective method of treatment is the removal of the mechanical obstruction of the right heart by sucking off the air. This measure may then be followed by the administration of various analeptics.

Gynaecologia, Basel

124:65-128 (Aug.) 1947

*Significance of Porphyrinuria for Diagnosis of Extrauterine Pregnancy. W. Neuweiler and Julia Rupp-Haller.—p. 65.

Duration of Pregnancy and Weight of the Newborn During the Starvation Period of 1944-1945 in Holland. J. A. Stroink.—p. 78.

Perforations at the Women's Clinic of the University of Szeged from 1921 to 1945. K. Magyar.—p. 85.

Tocodynamometer, Instrument for Measuring Uterine Contractions: Its Use in Obstetric Practice. S. Lóránd.—p. 98.

Indications, Technique and Results of Penicillin Therapy in Infections of Obstetric Origin. M. Mayer.—p. 105.

Porphyrinuria in Extrauterine Pregnancy.—Neuweiler and Rupp-Haller report that at the Women's Clinic of the University of Bern the porphyrin content of the urine was determined in nearly 400 patients in whom extrauterine pregnancy was present or suspected or who had other disorders in which porphyrin excretion was of interest. Porphyrin was demonstrated by means of the rapid method of Brugsch, which is based on the red fluorescence of the porphyrins in ultraviolet light. In two thirds of 122 patients with extrauterine pregnancy the porphyrin excretion in the urine was noticeably or considerably increased. In nearly a fifth the porphyrin reaction was weak, and in the remaining patients porphyrinuria was absent. Considering separately the various forms of extrauterine pregnancy, the authors found that in case of interrupted extrauterine pregnancy with the formation of hematocele, the incidence of porphyrinuria was somewhat higher; it occurred in 18 of 21 patients. As a rule, the porphyrinuria appeared rapidly, that is, from one to two days after onset of intra-abdominal hemorrhage. The authors found that porphyrinuria was a much more reliable indication of intra-abdominal hemorrhage than the urobilinogenuria. Of 100 women with intrauterine abortion, 28 had a greatly increased and 12 a weak elimination of porphyrin and in the other 60 it was normal. In patients with adnexitis porphyrinuria was positive in 58 per cent and negative in 42 per cent. In patients who had ovarian tumors with torsion of the pedicle and usually with hemorrhagic perfusion, 13 of 17 showed a great increase and 2 a slight increase in urinary porphyrin.

Klinische Wochenschrift, Würzburg

24/25:1-64 (Oct. 1 and Oct. 15) 1946. Partial Index

Physiologic Bases of Mechanics of Heart. H. Reichel.—p. 1.

*Enterococcic Pneumonia: Contribution to Problem of Chemoresistant Pneumonia. H. Lüdin.—p. 8.

Comparative Study on Effect of Some Sulfone and Sulfonamide Compounds on Streptococci in Vivo and in Vitro. W. H. Wagner and J. Kimmig.—p. 12.

Pathogenesis of Field Nephritis. K. Voit.—p. 14.

Carbohydrate Metabolism in Experimental Traumatic Tetanus. H. Staudinger.—p. 16.

*Oral Treatment of Pernicious Anemia with Small Amounts of Liver. F. Bahner.—p. 28.

Enterococcic Pneumonia.—Lüdin reports 7 cases of enterococcic pneumonia in 4 women and 3 men between the ages of 25 and 63. The patients had severe bronchopneumonia which was resistant to sulfonamide compounds. Bacteriologic studies revealed enterococci in the sputum; pneumococci were absent. In 1 patient a drop in temperature, rapid improvement in the general condition and lowered pulse rate followed the administration of antienterococcus monovalent horse serum. Fifteen

cubic centimeters of the serum were given by intramuscular route and 10 cc. intravenously. A second intravenous injection of 20 cc. was given the next day. Enterococci may be considered as an etiologic factor in pneumonia even though they have been found in the oral and pharyngeal cavities and in about 20 per cent of sputums of normal persons and have been described as nonpathogenic for man.

Liver Treatment of Pernicious Anemia.—Bahner treated 15 patients with pernicious anemia by oral administration of small amounts of predigested beef liver. The initial daily dose consisted of 20 Gm. of cut liver mixed with acid gastric juice. An approximate ten week course of treatment was required for restoring the blood picture to normal. Twenty grams of predigested liver twice a week were required as a maintenance dose in 7 patients, 20 Gm. of predigested liver three times a week in 2 patients and 20 Gm. of predigested liver six times a week in 6 patients. Additional treatment consisted of 1 teaspoon of hydrochloric acid in 1 glass of water at each meal. In recent cases of pernicious anemia routine treatment has now been instituted with daily doses of 40 Gm. of predigested liver to be continued until the blood picture has been restored to normal, after which a maintenance dose of 20 Gm. of predigested liver several times a week may be sufficient. To cure pernicious anemia the maintenance dose should be increased to 40 Gm. daily. There were no failures. The advantage of beef liver administered by mouth, as compared to liver extract administered intravenously, consists in the richer content of vitamins and highly potent proteins. This is particularly important in countries where nutrition is precarious, because administration of antipernicious substance leads to renovation of blood only provided that the erythropoietic apparatus has enough food proteins at its disposal. By the method described pernicious anemia can be cured in ambulant patients independently of liver extract preparations. Combined parenteral and oral treatment is indicated if there are only limited quantities of liver extract preparations available or if the available preparations are not adequately effective.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam
91:2637-2716 (Sept. 20) 1947. Partial Index

- *Generalized Necrotizing Arteritis Following Use of Sulfonamides. T. G. van Rijssel and L. Meyler.—p. 2649.
Spondylarthritidis Ankylopoietica (Bechterew's Disease): Treatment. D. L. Hulst.—p. 2658.
Improved Method of Search for Treponemas in the Dark Field. A. Bijndendijk.—p. 2667.

Necrotic Arteritis Following Sulfonamide Therapy.—Van Rijssel and Meyler report 6 patients in whom necropsy revealed necrotizing arteritis, which was attributed to allergy resulting from medication with sulfonamide compounds. In view of the serious dangers resulting from sensitization, the authors issue a warning against the use of sulfonamide drugs in cases in which they are not strictly indicated. The authors cite the case of a patient with carcinoma, who was given large doses of sulfadiazine in treatment of pneumonia. He died, and necropsy revealed arteritis in spleen, liver and lungs. The renal vessels were not involved, and the clinical history indicates that the renal function had been unimpaired to the end. This indicates that arteritis may develop in sulfonamide therapy even when the function remains normal.

Ophthalmologica, Basel

114:129-192 (Sept.) 1947. Partial Index

- *Chronic Superficial Punctate Keratitis by Onchocerca Volvulus. M. Appelmans.—p. 129.
Action of Testosterone Preparations on Intraocular Pressure. Magda Radnót.—p. 168.

Chronic Superficial Punctate Keratitis by Onchocerca Volvulus.—According to Appelmans the chronic form of punctate keratitis prevails in endemic form in central America and in tropical Africa. Its etiologic basis is variable. They report 2 cases in which chronic superficial punctate keratitis was caused by *Onchocerca volvulus*. The patients were Europeans recently returned from the Belgian Congo. A definite diagnosis of onchocerciasis requires the biomicroscopic demonstration of mobile larvae. It is not sufficient that a patient with filariasis who has been in the tropics shows chronic superficial punctate

keratitis or uveitis with eosinophilia; there must be proof of the presence of the exact species of the parasites in the eye. The presence of larvae of *Onchocerca volvulus* in the anterior chamber is not sufficient to produce an iritis. Allergic factors also seem to play a part in the origin of keratitis and uveitis. The only treatment known is the extirpation of the filarial nodules. This hinders the increase of embryos and prevents entry of larvae into the eye, as long as the carrier is guarded against new infection. The author recommends an application of 5 per cent mercurous chloride ointment in the conjunctival sac to alleviate keratitis punctata caused by filariasis in those cases which do not exhibit parasitic tumors.

Presse Médicale, Paris

55:693-708 (Oct. 18) 1947

- *Preservation of Solutions of Penicillin and Streptomycin and of Combined Solutions of Penicillin and Streptomycin: Conclusions. G. Ramon and R. Richou.—p. 693.
*Bronchial Syndrome According to Bronchoscopic Observations. A. Soulas.—p. 694.
Considerations on Tracing of Syphilis by Systematic Serologic Examinations (Practical Value of Micromethods). M. Foustier.—p. 695.

Preservation of Solutions of Penicillin and Streptomycin.—Experiments by Ramon and Richou demonstrated that penicillin treated with from 0.03 to 0.05 per cent of the commercial solution of formaldehyde for the solution of penicillin, or treated simultaneously with formaldehyde and warming up to 55 C. (131 F.), will retain its antibiotic properties and will not become contaminated with microbes for more than three months at temperatures of 2 to 4 C. (35.6 to 39.2 F.) and for four weeks at temperatures of 15 to 20 C. (59 to 68 F.). The same applies to solutions of streptomycin for a period of about four months at laboratory temperatures of 13 to 18 C. (55.4 to 64.4 F.) when 0.03 per cent of formaldehyde had been added to the solution of streptomycin. A combined solution of penicillin and streptomycin treated with formaldehyde will remain sterile and stable for a period of time comparable to that recorded for each of these substances in separate solution. The employment particularly of the combined solution will facilitate antibiotic therapy on a broader scale especially against mixed infections caused by bacteria partly resistant either to streptomycin or to penicillin or against infections in which the microbic agent has not been determined by laboratory methods before treatment is instituted. A combined solution of penicillin and streptomycin is indicated for local treatment of convalescents or carriers of diphtheria and for persons suffering from or exposed to whooping cough.

The Bronchial Syndrome.—According to Soulas the anatomophysiological changes of the bronchial tube and of the bronchial wall have a controlling influence on the bronchial syndrome. Changes in the bronchial wall are characterized by edema, and that applies to transitory and superficial lesions resulting in functional disturbances, to organic lesions, such as erosive inflammation or ulceration, and to an involvement extending far below the surface, such as necrosis, stenosis or new growth. Whether superficial or deep, the parietal lesion produces disturbances lessening the secretion of mucus. There is also deficient expulsion of the bronchial secretion, due not only to the deficient vector represented by the cilia and the mucus but also to lessened motility of the wall. This threefold deficiency in the defense power of the bronchus causes not only obstruction but also stagnation and retention. Bronchoscopic treatment should be directed to the relief of the obstruction of the bronchial tree by clearing the bronchi and by restoring their secretory, excretory and motor power. The peribronchial tissue also plays an important part in the bronchial syndrome by representing the junction between the main bronchial tree and the parenchymatous area causing a response in one of the broncho-alveolar sectors. This relationship explains certain factors in extensive or localized pulmonary atelectasis in which the bronchial obstruction appears to be incomplete or there is only mild hypoventilation in spite of apparent complete obstruction. The same concept explains certain types of bronchiectatic suppuration which results from endobronchial and peribronchial lesions. It may also be an aid to understanding the localized so-called atelectatic or emphysematous processes temporarily associated with various bronchopulmonary disorders.

Book Notices

A Textbook of Medicine. Edited by Russell L. Cecil, A.B., M.D., Sc.D., Professor of Clinical Medicine, Cornell University Medical College, New York, with the assistance of Walsh McDermott, M.D., Associate Professor of Medicine, Cornell University Medical College, Associate Editor for Diseases of the Nervous System, Harold G. Wolff, M.D., Associate Professor of Neurology, Cornell University Medical College. Seventh edition. Cloth. Price, \$12. Pp. 1730, with 244 illustrations. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1947.

This latest edition of what has come to be a leading textbook of medicine is some 170 pages longer than the previous edition and has many revisions. Among the new articles in the current volume are many on nutritional disturbances, one on psychosomatic medicine and one on narcolepsy. Because of the deaths of some of the former contributors, new articles have been prepared on conditions caused by viruses, on many infections and on many disturbances of the nervous system. Some colored illustrations have been added to the text. Because of changes in knowledge of the etiology of certain diseases there are transpositions of material. Conspicuous is the resignation of Dr. Foster Kennedy as associate editor for diseases of the nervous system. His place has been taken by Dr. Harold G. Wolff, professor of medicine in charge of nervous diseases in the Cornell University Medical College. Because of the considerable number of specialists who contribute to this book and the careful editing, the volume continues to maintain a place of great importance among books available for teaching the practice of medicine.

Elementary Medical Physics. By Howard O. Stearns, Associate Professor of Physics, Simmons College, Boston. Cloth. Price, \$4.75. Pp. 354, with illustrations. The Macmillan Co., 60 Fifth Ave., New York 11, 1947.

This textbook is written with the laudable idea of correlating the important subject of physics with biologic and medical sciences and of pointing out to the students where and how the laws of physics are applied to apparatus and instruments used in the practice of medicine. The objective of the author is meritorious. Too few textbooks on physics have been written for the premedical student, with the unfortunate result that in general the student has been less interested in physics than in any other basic science.

The book is aimed at the level of an introductory course in college. The author has made an attempt to simplify the mathematical analysis which is so necessary to an understanding of physics.

There are scattered through the book many applications of important laws and physical principles pertaining to biologic or medical sciences. This is an innovation, because many textbooks on physics employ mainly applications bearing on engineering or other technical uses. For example, to illustrate forces the bones and muscles of the body are depicted instead of a bridge or crane.

Colleges and universities training premedical students might well consider use of this textbook. It is recommended as a supplemental textbook for the special classes composed of premedical students only. Teachers of physical therapy and x-ray technicians will find the textbook a useful pedagogic aid.

The Fungi. Volumes I and II. By Frederick A. Wolf and Frederick T. Wolf. In two volumes. Cloth. Price, \$6; \$6.50. Pp. 438, with 153 illustrations; 538, with 82 illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W. C. 2, 1947.

Fungi have received increased attention during recent years because of the important role that they play in many natural processes. These are specific processes such as (1) the production by fungi of penicillin and other antibiotics; (2) the use of fungi in many important fermentations, such as the manufacture of citric, fumaric, itaconic and other acids; (3) the role of fungi in the destruction of many kinds of service materials, including cotton and leather goods, optical instruments and electrical equipment, under tropical conditions, and (4) the causation by fungi of human diseases.

A great need exists for a comprehensive summary of present knowledge of the nature of fungi, their physiology and their

role in natural processes. These two volumes have amply filled this need and serve as an introduction to more specialized fields.

The first volume is devoted to a discussion of isolation, cultivation and classification of fungi and a description of the more important groups.

Each chapter has adequate reference to literature wherein the reader can obtain further information. Each volume has a comprehensive author and subject index.

The chapter on medical mycology in the second volume will be of particular interest to the medical reader. After brief historical survey of the subject, the authors discuss important disease organisms such as *Trichophyta* or ringworm fungi, *Coccidioides immitis*, *Histoplasma capsulatum*, *Aspergillus fumigatus*, *Sporotrichum schenckii*, *Actinomyces bovis* and *Monilia (candida)*.

Other chapters, notably those dealing with the poisonous and edible fungi and fungus-insect interrelationships, also are of definite interest. One would prefer inclusion of two additional chapters, one dealing with the production of antibiotics by fungi, and another on fungistatic and fungicidal agents.

The Principles and Practice of Medicine: Designed for the Use of Practitioners and Students of Medicine. Originally Written by William Osler, M.D., F.R.C.P. By Henry A. Christlan, A.M., M.D., LL.D. Sixteenth edition. Cloth. Price, \$10. Pp. 1539. D. Appleton-Century Co., Inc., 35 W. 32nd St., New York 1; 34 Bedford St., Strand London, W. C. 2, 1947.

Proof that time marches on is apparent in the sixteenth edition of Osler's "Principles and Practice of Medicine." The name Osler has disappeared from the cover, but the title page indicates that this is the book "originally written by William Osler, M.D."

Dr. Christian calls attention in his introduction to many additions that have been made since the last previous edition in 1944. These concern principally the use of the antibiotic and sulfonamide drugs in treatment and new classifications based on advancing knowledge of infections. "Catarrhal jaundice" and "Weil's disease" have been discarded, to be replaced by hepatitis of many varieties.

In this edition also appears a brief history of the Osler textbook of medicine prepared by Dr. James G. Carr of Chicago, with incidentally a facsimile of a note of appreciation written by William Osler in 1892. The present edition is approximately 40 pages longer than the last previous edition—an indication of the new material that has been added.

Stop Annoying Your Children. By W. W. Bauer, M.D., Director, Bureau of Health Education, and Associate Editor of *Hygeia*. Cloth. Price, \$2.75. Pp. 272, with illustrations. Bobbs-Merrill Co., 724-730 N. Meridian St., Indianapolis 7, 1947.

Even if the last chapter in this book had not been written by the author's daughter, it would have been obvious to the discerning reader that Dr. Bauer is a father. Only a sympathetic and understanding parent could have learned as much about child psychology as he evidently knows. The whole period of childhood, from infancy to adolescence, is covered in this little book, and virtually every problem that modern parents encounter is discussed in a clear, sensible manner. While Dr. Bauer's sympathy is with the child, he also has a kindly feeling for the parent.

Perhaps the motif of the book is expressed in this sentence: "The great difficulty which children face in making their decisions is lack of experience." Over and over Dr. Bauer makes the point that children must learn by the trial and error method and that parents make a mistake when they interfere too much with this method. The adult should not often attempt to force his opinions on the child, even though they are based on his own experience, but should rather present all sides of a question, then let the child decide for himself, or herself. "Nine chances out of ten," Dr. Bauer says, "she will make the correct decision."

Dr. Bauer's book will not flatter the ego of many—indeed, of most—parents, but it should make every parent who reads it without prejudice understand his children better. The author's smooth style and the delicious flavoring of humor in every chapter make the dose palatable, even though it is strong medicine. Furthermore, those conscientious parents who have been led to believe that a child's entire life can be ruined by a few mistakes made in the early years of inexperience will obtain

comfort from the chapter, "Turning Over a New Leaf." One sentence is especially comforting: "In spite of parental fears and in spite of parental blunders, most children do turn out all right."

Another comforting thought is to be found in the chapter, "Parents Can Be Wrong," in which the author says: "The capacity of our children for loyalty and forgiveness is almost unlimited. . . . It is a marvel that children have such a terrific loyalty to their parents."

Dr. Bauer's book can be commended unreservedly to young and even not-so-young parents who want to do right by their children. Its author might well have paraphrased Ambrose Paré's famous sentence: "See how I learned to treat gunshot wounds; not out of books." Dr. Bauer, although he gives a list of books on child psychology for reference, might well say of his own book: "See how I learned to deal with children; not out of books."

Atlas of Cardiovascular Diseases: Correlation of Clinical Electrocardiography and Cardiac Roentgenology with Clinical History and Autopsy Findings. By Irving J. Trelger, M.D., Assistant Professor of Medicine, University of Illinois, Chicago. Cloth. Price, \$10. Pp. 180, with 69 plates. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1947.

The title page of this volume states that it is a "correlation of clinical electrocardiography and cardiac roentgenology with clinical history and autopsy findings." However, a careful study of the volume reveals many gaps in effective correlation. In the author's apparent endeavor to secure brevity he seems in a number of instances to have sacrificed clarity and effective discussion of the correlation of the observations. There are also several instances in which it is difficult to agree with his conclusions. One of the most striking examples is his statement that "correlation of history, physical findings, roentgenogram, and electrocardiogram leads to a correct understanding of the degree of anatomical and physiological changes in the heart and to a proper dose of various medications for their correction." One might agree, had the author said of a proper "selection" rather than "dose." Although in itself this is perhaps a minor misstatement, it could certainly prove highly misleading to the student or physician who was not too well acquainted with the subjects of pharmacology and therapeutics. This statement appears in the preface, but it is difficult, if not impossible, to find any elaboration of it in the context.

The illustrations are for the most part well executed, but unfortunately it is sometimes difficult to see in them the condition under discussion. For example, in plate 61 the legend mentions erosion of the thoracic vertebrae, but this condition is not revealed in the illustration.

Despite these shortcomings and others not specifically mentioned, the volume should prove useful to many as a source of graphic illustration chiefly of roentgenologic and anatomic observations in a fairly large range of cardiovascular diseases. In the hands of a competent teacher it might prove helpful as a basis for discussion of the various topics, the elaboration to be provided by the teacher.

However, when it is compared with some of the similar works on roentgenology of the heart and electrocardiography and their relation, it adds little of value to the existing literary armamentarium.

Dermatologic Clues to Internal Disease. By Howard T. Behrman, M.D., Assistant Clinical Professor of Dermatology, New York University College of Medicine, New York. Cloth. Price, \$5. Pp. 165, with 118 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1947.

Those who favor small books with brief discussions in outline form will find this book to their liking. The material is arranged alphabetically. The descriptions of various symptoms and syndromes, intended to serve only as clues, are concise but adequate, and the illustrations in general are well selected. Many eponymic syndromes are described. The common skin diseases and the exanthems are omitted, and there is no bibliography. By the use of cross references and the avoidance of repetition, the author has successfully restricted the size of the book and fulfilled his objective to furnish a book of clues for the correlation of certain cutaneous symptoms and systemic diseases. Also, he has managed to include his own opinion on certain problems; it is not just a cold compilation of material.

Molding and Casting for Moulage Workers, Sculptors, Artists, Physicists, Dentists, Criminologists, Craftsmen, Pattern Makers and Architectural Modelers. By Carl Dame Clarke, Ph.D., Associate Professor of Art as Applied to Medicine, School of Medicine, University of Maryland, Baltimore. Second edition. Cloth. Price, \$6.50. Pp. 300, with 99 illustrations. Standard Arts Press, 2635 N. Calvert St., Baltimore 18, 1946.

This is the second edition of "Molding and Casting." The present volume is larger than the first edition and its content of descriptive and illustrative matter has been considerably amplified.

The author explains the principles of technic in taking impressions and making casts. He describes fully the nature, behavior and method of manipulation of various types of materials used in these procedures. The use of plaster of paris molds, agar (hydrocolloid), gelatin, rubber and other substances is described, as are the various casting materials such as plaster of paris, wax and rubber.

While the book is of primary interest to medical artists specializing in plastic reproduction of anatomic and pathologic conditions, as well as in surgical procedures for making authentic records and for teaching purposes, it should find useful application in many other fields. Pathologists or anatomists who want to make their own preparations for use in classroom demonstration or lectures, preparators of museums of science and natural history and artists and craftsmen can all learn much from it.

This book should be useful to those interested in visual methods of instruction, particularly of a medical nature, as it explains the technic of preparing three-dimensional teaching aids, one of the most effective mediums of instruction. It gives numerous formulas for compounding material for taking impressions and making positive casts, which should mean considerable saving, provided that one has experience with such formulas.

One cannot help feeling that most of the chapter on "balsams, gums, resins, hydrocolloids and waxes" could have been left out, as a listing of such a large group of waxes, together with their physical and chemical properties, appears out of place in a book of this nature.

Since realistic appearance in most plastic reproductions of biologic specimens depends on fidelity of reproduction of color, in addition to reproduction of form, a more complete treatment of this all-important phase of the work would have improved the practical value of the book.

To the specialist the value of the book is naturally limited, but to the amateur it should prove a valuable guide.

Counseling in Schools of Nursing: A Study of the Principles and Techniques of Personnel Services for Students. By H. Phoebe Gordon, Assistant Professor of Nursing and Student Counselor, School of Nursing, University of Minnesota, Minneapolis; Katharine J. Densford, R.N., Professor of Nursing and Director, School of Nursing, University of Minnesota, and E. G. Williamson, Professor of Psychology and Dean of Students, University of Minnesota. Cloth. Price, \$3. Pp. 279. McGraw-Hill Book Co., Inc., 330 W. 42d St., New York 18, 1947.

This book provides excellent orientation for administrators, counselors, instructors, supervisors, head nurses and general staff nurses in the problems of student nurses and the guidance which should be available to them. It should prove valuable in the preparation of the personnel specialist or counselor. The authors are particularly well qualified by training and experience to present the subject of counseling in an authoritative and comprehensive manner. Part 1 provides the historical background of nursing and personnel work, while 2 and 3 deal with the understanding of the student, her problems in nursing and types of counseling which are necessary. Part 4 offers a practical approach to organization and development of a personnel program.

The importance of good counseling to the student, who is enabled to make the most of her opportunities, is stressed throughout. The hospital and patient benefit by improved morale and better adjustment of the student. The hospital administrator or director of the school of nursing who questions the necessity of instituting a counseling program will find convincing evidence in this little volume of its economy in the functioning of the hospital nursing service and the nursing school.

This book received the First Award of the McGraw-Hill Book Awards in Nursing Education.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

VENTILATION AND AIR BORNE INFECTIONS

To the Editor:—Will good ventilation without drafts in a nursery in southern California decrease the transference of air borne infections? Please cite references on the effect of improved ventilation on the infection rate. I find no articles on the use of ventilation for the control of air pollution.

Irving J. King, M.D., Los Angeles.

ANSWER.—In moderate amounts, ventilation is efficient in reducing the number of micro-organisms in the air and perhaps the infant mortality also. Too much ventilation, such as is used where the air pollution is heavy, may do more harm than good by stirring up infected dust particles off the floor. Blackfan and his associates have shown that other physical factors, such as temperature, humidity and "housecleaning," are more important than ventilation in the incidence of infection in premature infants.

References:

- Yaglou, C. P., and Wilson, U.: *Disinfection of Air by Air Conditioning Processes, Aerobiology*, A. A. S., p. 129, 1942.
Slot, G. A.: Effect of Decreased Ventilation on Infant Mortality and on Incidence of Diseases of Respiratory Tract in Adults, *Genesck. tijdschr. v. Nederl.-Indië* 77: 677 (March 16) 1937.
Blackfan, K. D., and others: The Premature Infant: A Study of the Effects of Atmospheric Conditions on Growth and on Development, *Am. J. Dis. Child.* 46: 1175 (Nov.) 1933.

TWIN PREGNANCY AND PERIOD OF INSEMINATION AFTER OVULATION

the Editor:—I am interested in the possibility of the relationship of the occurrence of twin pregnancy and the period of insemination of the ovum after ovulation. I know of 1 case of twins in which coitus occurred on the nineteenth day of the menstrual cycle in a woman whose cycle averages twenty-eight days. Data from readers would be appreciated.

Hugh Macdonald, M.D., Peoria, Ill.

ANSWER.—There is suggestive evidence from comparative embryology that deleterious influences exerted on the fertilized egg may increase the incidence of twinning. However, in man there is no apparent relationship between the occurrence of multiple pregnancy and the period of insemination of the ovum after ovulation. There are considerable data which would indicate that ovulation usually occurs about fourteen days preceding the onset of the next menstrual period. This interval is rather constant regardless of the length of the menstrual cycles. The ovum is capable of being fertilized for a short period following ovulation, probably less than twenty-four hours.

Monozygotic twins represent early segmentation of the fertilized ovum. Dizygotic twins result from two separate ovulations and the fertilization of both ova. Two egg twinning is definitely influenced by heredity, parity and age.

EFFECT OF SPLENECTOMY ON THE BLOOD

To the Editor:—A man sustained a fall in August 1946, rupturing the spleen and necessitating a splenectomy. He developed obstruction of the bowel twice following splenectomy, a pelvic abscess, collapse of the right lung and blood in the urine. He finally recovered. Blood examination after splenectomy revealed a leukocytosis of 46,000 gradually lowering to 13,000 at the present time with 59 per cent lymphocytes. There is 3 to 4 ounces retention of urine. Please give me the latest opinion on the effect of splenectomy on the blood. Does a high lymphocyte count cause extreme lassitude?

M.D., New York.

ANSWER.—Removal of the spleen is followed early by a mild anemia with the appearance of nucleated red cells, reticulocytes, polychromatophilia and Howell-Jolly bodies in the red cells and by leukocytosis and thrombocytosis. Some of these changes are thought to be evidence of an inhibitory effect of the spleen on bone marrow function. The anemia and thrombocytosis are bone marrow function. The anemia and thrombocytosis are transient, while in many cases there is a persistence of moderate leukocytosis with an increase in the lymphocytes and monocytes. Most patients have no symptoms following splenectomy, but some have been reported to have easy exhaustion and vague gastrointestinal complaints. There is no evidence of a relationship between mild lymphocytosis and lassitude.

PRESERVATION OF SKIN GRAFTS

To the Editor:—I have in mind the possibility of preserving the life of a piece of skin accidentally cut off until granulation tissue has formed on the denuded area, at which time the skin would be grafted onto the area from which it came. I would appreciate information on this or related subjects or the name of some other source of rather complete information on this subject.

M.D., Minnesota.

ANSWER.—Skin grafts may be refrigerated under sterile conditions and successfully transplanted after a number of days. They should not be frozen. Usually there is no reason for doing this. About the only reason, during an elective operation, for doing a delayed graft would be if the patient's condition became such, after the grafts had been cut but before they were applied, to justify stopping the operation without application of the grafts; the grafts could then be refrigerated and applied later.

In the event of avulsed tissue, one would be much more sure of a take by applying the avulsed skin to the raw surface in the shortest period of time possible after the accident. Of necessity one frequently applies skin grafts to a granulating wound, but it is much to be preferred to apply grafts to a newly created wound rather than await granulations.

About the only preserved tissue commonly used with success for subcutaneous grafting is preserved cartilage.

HOME WATER SOFTENERS

To the Editor:—In the July 1947 issue of *Consumers Research* an article by C. A. Tyler, Ph.D., on "Soft Water for the Home" says "If a softening system is installed, at least one tap (a cold water tap) should deliver water which has not been treated; water which has been softened should not be used for cooking or drinking." There is no further explanation. In your opinion, should softened water not be used for cooking or drinking?

A. J. Price, M.D., Canandaigua, N. Y.

ANSWER.—Home water softeners in their exchange of sodium for calcium in the dissolved salts in natural water may render the water less palatable, particularly if the "hardness" of the water is reduced to zero. A sudden change in the chemical characteristics of one's drinking water may cause some physiologic reaction.

The condition under which home water softeners are maintained and operated by persons inexperienced in water treatment may result in some contamination of the water.

For these reasons it may be desirable to install an additional cold water tap in the home. This does not mean however that in all cases softened water should not be used for drinking or cooking purposes. Public water supplies which are softened under technical supervision are usually so treated that both safety and palatability are assured and the supply is entirely potable.

PHLEBITIS

To the Editor:—Please let me know the accepted treatment for edema of the lower extremity in these two cases: 1. A man with no history of phlebitis or clinical evidence of phlebitis has a few superficial varicosities and a dilated saphena magna. Is ligation of the saphena magna indicated? If so, what is the rationale for ligation? 2. A woman has had a ligation of the saphena magna, as evidenced by a scar in the groin; there is still evidence of a dilated saphena magna extending three fourths of the way up the thigh and also some superficial varicosities. What means, medical or surgical, would improve or cure edema of the extremity in this case? Pelvic examination is negative in both cases.

Alexander Zabin, M.D., Malverne, L. I., N. Y.

ANSWER.—1. Lack of history of phlebitis does not rule out deep venous obstruction or deep valvular insufficiency, since many patients develop segmental venous obstructions in the deep veins without obvious clinical symptoms. More important is the presence of deep venous obstruction or deep venous reflux. If the saphenous valve is demonstrably incompetent in the standing position, the ligation of the long saphenous vein at its junction with the femoral vein is reasonable, since it removes the back-pressure from above; however, if the saphenous dilatation is caused in addition by incompetent perforators, they may have to be interrupted either by multiple ligations or by stripping out the entire long saphenous vein. If the valvular incompetence is in the deep veins, operations or injections on the superficial venous system will never be of lasting benefit, since the increased deep venous pressure will produce additional varicosities through perforator channels. In such cases well fitting elastic hose may be prescribed; more recently some authors have advocated the division of the superficial femoral vein below the profunda with the idea of decreasing the deep venous pressure in the leg. Such operations can be done only by men specially interested in this field and only in cases in which the disadvantages of the deep venous reflux outweigh the disadvantages of deep venous obstruction. Generally speaking, serious ankle edema with dilatation

of the saphenous system is more apt to be due to deep venous insufficiency, since uncomplicated saphenous varicosities seldom if ever produce ankle edema.

2. The presence of a dilated saphenous vein, in spite of a previous ligation, often means that the vein was insufficiently ligated and that the saphenous bulb is still patent with a number of tributaries. It is inadvisable for any one to ligate or inject such varicosities until he has satisfied himself as to the state of the superficial, communicating and deep valves. A pamphlet on varicose veins issued by the American Medical Association summarizes the necessary tests and the principles of treatment.

PROPHYLACTIC THERAPY IN PROLONGED LABOR

To the Editor:—It is my impression that prophylactic therapy with penicillin and one of the sulfonamides is used as a routine procedure at the New York Lying-In Hospital in cases of ruptured membranes after twelve hours. This is based on extensive research by Dr. Douglas at that institution. Have you any information concerning this or any like procedure in any other leading clinic? Martin E. Tyrrell, M.D., Depew, N. Y.

ANSWER.—In cases of premature rupture of the membranes without labor it is usually not necessary to prescribe prophylactic penicillin and sulfadiazine therapy. Experience has indicated, however, that when the membranes rupture prematurely and a desultory labor ensues such treatment is of great value. It may at times be instituted early in labor, but it should always be started, if possible, before twenty-four hours of labor. Experience has indicated that, if we wait until intrapartum infection has actually developed, the employment of the drugs is not nearly so effective as when they are employed prophylactically. Accordingly, it is necessary to predict complications such as prolonged labor, difficult delivery and trial of labor. The incidence of both intrapartum infection and subsequent puerperal infection can be greatly reduced by such treatment. It has also been shown that if a cesarean section becomes necessary after a trial of labor it can be done with a great deal more safety if the prophylactic therapy has been given.

The usual dose of penicillin recommended is 20,000 units given intramuscularly at intervals of three hours. Under certain conditions this dosage may be increased for a short period to 50,000 units every two hours. The sulfonamide of choice is sulfadiazine, and an adequate dose usually consists of 1 Gm. every four hours with about four times that amount of sodium bicarbonate. Occasionally it is necessary to give the sulfadiazine intravenously, and under such circumstances it is best to administer it with, or following, 500 cc. sixth-molar lactate solution. Experience suggests that the indications for prophylactic therapy arise in about 10 per cent of patients.

RELIEF OF PAIN OF INOPERABLE CANCER

To the Editor:—Please let me know the various accepted methods of relieving pain in inoperable cancer, especially carcinoma of the cervix, other than the use of narcotics.

Alexander Zabin, M.D., Malverne, L. I., N. Y.

ANSWER.—Three surgical procedures are generally used to relieve intractable pain associated with inoperable carcinoma of the cervix: chordotomy, pelvic sympathectomy and intraspinal injection of alcohol. Chordotomy, which consists of section of the anterolateral spinal tracts, will relieve pain, but it is an operation which usually requires the skill of a neurosurgeon. Unless the incision in the cord is accurately placed, the pain may not be completely relieved or the motor pathway may be damaged, resulting in paralysis of the legs and interference with control of the sphincters. The technic of chordotomy is described by F. C. Grant (*Am. J. Obst. & Gynec.* 24:620 [Oct.] 1932).

In pelvic sympathectomy the risk involved is slight, the technic is not complicated, and local infiltration anesthesia may be used for a large part of the operation. The type of operation usually performed is the one recommended by Cotté and consists in resection of the postganglionic fibers of the sympathetic nervous system which innervate the pelvic organs. The technic of pelvic sympathectomy is given by J. P. Greenhill and H. E. Schmitz (*THE JOURNAL*, July 1, 1933, p. 26).

Intraspinal injection of alcohol, which relieves pain by blocking the nerves that conduct pain sensation, is simple to carry out, entails very few risks and is highly effective in entirely or partially relieving pain associated with inoperable cancer of the cervix. The technic of intraspinal alcohol injection is given by E. L. Stern (*Am. J. Surg.* 25:217 [Aug.] 1934) and by J. P. Greenhill, and H. E. Schmitz (*THE JOURNAL*, Aug. 10, 1935, p. 406).

SEQUELAE OF CONJUNCTIVITIS

To the Editor:—A woman, a very intelligent nurse, aged 46, states that lid of her left eye is stuck to the cornea when she awakens. This has occurred fifty or sixty times in the last one and one-half years following a very bothersome conjunctivitis in both eyes. She keeps the membranes from sticking by the instillation of castor oil at night, the lids sticking in spite of this at times. When the lid and cornea are separated, there is discomfort, which disappears in about an hour. Examination is negative except for some superficial oval epithelium punctate markings at the lower margin of the left pupillary area. There seem to be a few of these in the right eye also. Her general health seems satisfactory. Her eyes are not subjectively dry, and a Schirmer test was normal.

M.D., California.

[This inquiry was referred to two authorities, whose respective replies follow.—Editor.]

ANSWER.—Occasionally after an attack of keratoconjunctivitis the cornea may remain more or less insensitive for a long time. There is also in these cases a reduced lacrimal secretion, although the Schirmer test may not reveal this. If one adds to these conditions some faulty closure of the eyelids during sleep, the corneal epithelium becomes dry and sticks to the tarsal conjunctiva, producing the symptoms mentioned. Treatment consists in use of a cod liver oil ointment, with 5 per cent glucose mixed in, applied in the conjunctival sac before retiring, and the use of a "moist chamber" covering during sleep.

ANSWER.—This patient may have had an allergic conjunctivitis with a superficial punctate keratitis. Epithelial infiltrates are common findings in long standing conjunctival allergies. In such cases one drop of Lugol's solution in ½ ounce of 1 per cent potassium iodide, used three times a day, allows clearing in a few weeks. A boric acid ointment at night prevents discomfort on awakening in the morning.

PITYRIASIS OR TINEA VERSICOLOR

To the Editor:—A woman aged about 30 consulted me three years ago with regard to a discoloration or pigmentation on the breasts about the size of a silver dollar which in a few weeks spread slowly to her shoulders. It is now down as far as the navel in front but only on the shoulders on the back and up the neck on the sides. It spreads slowly and in patches, some as large as my double hands and solid, and good skin is mingled with the pigmentation. The skin isn't raised and is smoother than normal skin but rather brown, and on some days red. It itches somewhat when she gets hot. It seems to scale off slightly and these particular spots feel dry. There is no pain. I first gave her Coffron Capsules, which didn't seem to help; then I gave her Thio-Bismol shots every other day for some time, then two each week. This was about two and a half years ago and it seemed to help some. During this time the discoloration was only on her shoulders. I thought she was getting along well and so stopped the shots. As time went on it got worse, so I gave more Thio-Bismol shots but didn't get as good results as at first. I took a blood test in 1942 and another in 1945 and both were negative. The temperature is 98.2 F., the blood pressure 112/60, the pulse rate 72. Specific gravity of the urine 1.027, slightly acid, no sugar, and slight albuminuria. The teeth are in fair condition.

M.D., Missouri.

ANSWER.—These pigmented spots, of various sizes and designs, with mild scaling probably are those of pityriasis or tinea versicolor. In this disorder there are slightly raised patches and sheets appearing on the flanks, usually not spreading through the midlines, and in extreme cases they may cover the entire torso. The patient develops a slight furfurescence or powdery scale which can be best appreciated by scraping the affected parts. At times the lesions are reddish, especially when they are irritated or after friction and sweating. There may be some itching. The lesions commence at the site of the follicles and then spread and coalesce with neighboring ones to form patches. This infection is said to occur in those who are given to much sweating and is commonly believed to occur more frequently for that reason perhaps in tuberculous subjects. This impression has not been verified by some observers. It is true, however, that some persons are subject to this disorder, and even though the apparent trouble is cleared, it tends to recur in them. The infection is due to a fungus called *Microsporon furfur*, which lives on the surface of the skin and produces changes in the very superficial parts. The organism really should be classified as a saprophyte rather than one which produces any real pathologic condition. Treatment can be carried out simply with about 12 per cent sodium thiosulfate solution in water, sponged on the parts twice a day until they are cleared. Whatever the topical method used, it should be continued for an appreciable period after the lesions disappear. Other methods which have been employed with success are mercury bichloride water solution 1:5,000, a 3 to 5 per cent sulfur treatment and Whitfield's ointment (best carried out in ¼ to ½ strength).

This fungous infection has no effect on the general health and does not require any radical treatment. It tends to relapse. In those who are subject to it, simple treatment such as with the sodium thiosulfate solution may be continued twice a week after the lesions have cleared.

EXFOLIATIVE DERMATITIS

To the Editor:—A woman aged 20, with a history of rheumatic heart disease from childhood, developed symptoms of arthritis in March 1947. She was given a course of penicillin therapy amounting to about 1,500,000 units. In April several areas of redness and scaling on her body and seborrheic eczema of the scalp and ears developed. Subsequently exfoliative dermatitis involved the entire body. When first seen by me on June 19 the patient appeared extremely ill, with rapid pulse, temperature 102.6 F. and oozing from fissured areas in the folds of the body, with a profuse purulent discharge from both ears, swelling of the hands and feet and fissuring on the dorsal surface of the toes. After admission to the hospital her temperature dropped to normal within forty-eight hours. Culture of the ear discharge showed a pure growth of *Proteus vulgaris*. Urinalysis was negative. The blood counts ranged from 10,500 to 21,000 white blood corpuscles. The erythrocytes dropped from 3,750,000 to 2,750,000, and the hemoglobin from 68 per cent to 59 per cent. The differential count varied from 35 per cent to 58 per cent of polymorphonuclears. The lymphocytes ranged from 92 to 5 per cent. There was a slight shift to the left. Blood culture was negative. During the hospital stay all the fissures except those in the toe region were healed, but the exfoliation and the ear drainage continued. There is a considerable loss of hair. The lymph glands, liver and spleen were not enlarged. Is it possible that this condition could be a penicillin reaction or a preleukemic condition? I would appreciate any suggestion.

M.D., Florida.

ANSWER:—Skin eruptions following the use of penicillin are extremely variable. The commonest type of eruption following its use is urticaria, but maculopapular and erythematous lesions are not infrequent. Bullous lesions and exfoliative dermatitis have likewise been observed. The severe cases of exfoliative dermatitis that have been described rarely last more than three weeks. In the case under discussion, the nature of the onset of the eruption and its long duration, together with the profound changes in the blood, would make one question the diagnosis of penicillin sensitivity. The vast majority of eruptions appear within five to twenty-one days after penicillin is started and rarely persist more than twenty-one days after their appearance. Careful patch testing with penicillin might provide information concerning penicillin sensitivity.

APPLICATION OF SILVER NITRATE TO THE EYE

To the Editor:—My wife has been advised by an eye doctor to use silver nitrate. He himself applies it. It makes her quite uncomfortable. A member of the board of ophthalmology states that he has not used this in years. Please advise.

M.D., Alabama.

ANSWER:—Silver nitrate is extensively used for the prevention of ophthalmia neonatorum and in the treatment of mucopurulent conjunctivitis, trachoma, blepharitis and many other conjunctival inflammations. Its effect is due largely to a caustic action which coagulates superficial layers of the conjunctival epithelium, forming a bluish white eschar which is washed, wiped or cast off in flakes. Silver nitrate is not strongly antiseptic, but organisms are entangled in the coagulum and removed with it. A secondary effect arises from the irritation, which causes a hyperemia and flooding of the part with serum. The pain caused by application of the drug may be relieved by cocaine.

All silver salts are irritating to the eye, the degree of irritation paralleling the concentration of the drug used and to a great extent dependent on the nature of the salt used. Long continued use may result in the deposit of silver in the tissues (argyrosis), a condition which may rarely follow relatively few applications. Local application delays epithelization of the abraded cornea, and blindness has been known to follow the use of too strong a solution. Thus extreme care must be exercised whenever silver salts are used.

MONGOLIAN IDIOCY AND CRETINISM

To the Editor:—Are there any tests other than clinical examination to differentiate between mongolian idiocy and cretinism? How can one determine the basal metabolism of an 8 month old baby other than by direct calorimetry?

L. A. Crowell Jr., M.D., Lincoln, N. C.

ANSWER:—It is usually possible to differentiate between mongolian idiocy and cretinism by the appearance of the patient. In occasional instances there may be some doubt as to the exact diagnosis and under these circumstances the two conditions can usually be differentiated by a therapeutic trial of desiccated thyroid. The initial dose for an 8 month old baby should be $\frac{1}{4}$ grain (15 mg.) of U. S. P. thyroid daily.

Direct calorimetry is carried out in only a few clinics in the country, and the results of basal metabolism determination in babies and very young children are open to question. In most instances in which the diagnosis is in doubt it is preferable to make a therapeutic test with desiccated thyroid rather than rely too much on basal metabolism determinations.

SEVERE BACK PAIN

To the Editor:—A veteran, 35, had his first severe episode of back pain while in Hollandia, New Guinea, and since then has had three recurrences of severe pain twice on the left side and once on the right side, typical of renal colic. Opiates relieved the pain. Red blood cells have appeared intermittently in the urine during and between the attacks. Two competent genitourinary surgeons have made thorough studies by cystoscopy, retrograde and intravenous pyelogram. No cause for the condition has been determined. Gallbladder, gastrointestinal x-rays and barium enema are negative. The blood count is normal. Stool examinations have been repeatedly negative. A centrifuge specimen of the urine on two occasions contained a small shiny red round object which we have been unable to identify. Is there a tropical disease endemic to New Guinea which could in some way be responsible for the occasional recurrences simulating renal colic?

M.D., New Jersey.

ANSWER:—Schistosomiasis is a tropical disease which could cause symptoms as outlined. Cystoscopically, schistosomiasis is characterized by small papillomatous and granulomatous lesions about the ureteral orifices. However, adnexal disease could also cause these symptoms. Vesiculitis in particular can cause hematuria and ureteral colic because of the proximity of the vesicle and ureter.

RETREATMENT OF SYPHILIS DURING PREGNANCY

To the Editor:—What is the best month for retreatment of syphilis during pregnancy? I have a patient who was treated for secondary syphilis in September 1946. She received 4,500,000 units of penicillin (50,000 units every three hours) as well as ten injections of oxophenarsine hydrochloride and four injections of bismuth subsalicylate in oil (1 cc. each). Her serum reaction, which was strongly positive at first, became negative in about six months and has continued so. At present she is going into her fourth month of pregnancy. I would appreciate knowing when retreatment should be started with penicillin and with what dosages; whether oxophenarsine hydrochloride and bismuth should also be given and whether a spinal tap should be taken and when. The husband has also been treated for the same condition and has likewise been negative since March.

M.D., Connecticut.

ANSWER:—It may be that the patient is cured and that there will be no danger of the fetus being infected. However, in view of the comparatively innocuous character of the remedy employed, we would recommend that in this particular situation the patient be given a daily intramuscular injection in alternating buttocks of penicillin calcium (peanut oil in beeswax) 300,000 units for a series of twelve injections. Moreover, the fourth month would be an ideal time to administer the treatment. In view of the almost specific effect of the drug in syphilis in pregnancy, no further treatment with heavy metal is necessary. A lumbar puncture is not recommended during pregnancy but should be done sometime after the birth of the baby. It would be well to continue the monthly titrated serologic test on both wife and husband until such a time as they have been completely negative for one year. Moreover, after delivery the child should likewise have a titrated serologic test beginning with the cord blood and at the second, fourth, sixth and twelfth month. It is only by the titrated test that the true situation can be properly followed. A rise in the curve that persists and continues to increase indicates syphilis and imminent relapse.

TUBERCULOSIS AND WIND INSTRUMENTS

To the Editor:—Kindly advise me whether it is harmful to allow an adult patient with a healed pulmonary tuberculosis lesion to play a wind instrument.

M.D., New York.

ANSWER:—If the tuberculous lesion is completely healed, the answer is easy: in early or moderately advanced disease no particular harm can arise from blowing a wind instrument; if the disease was far advanced and the lung parenchyma over half destroyed, there would be a risk of producing or aggravating an emphysema, which practically always accompanies a far advanced healed disease.

Since few patients or physicians can always know whether complete healing has taken place in any given case, it is difficult to say just when such strenuous exercises can be begun even in early cases. A safe rule would be to have a negative stomach lavage for tubercle bacilli for at least two to three years after the usual clinical arrest of the disease.

PREGNANCY AND HODGKIN'S DISEASE

To the Editor:—Referring to a Query and Minor Note, "Pregnancy and Hodgkin's Disease," *The Journal*, Oct. 4, 1947, page 318, I submit the following reference: Kushner, J. Irving: Pregnancy Complicating Hodgkin's Disease (Lymphogranuloma Malignum), *Am. J. Obst. & Gynec.* 42:536-538 (Sept.) 1941, in which the history of a patient with pregnancy complicated by Hodgkin's disease is reported. This patient received radiation therapy during the early months of her pregnancy. A healthy child was born, whose subsequent development was normal.

J. Irving Kushner, M.D., New York.

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PSYCHOSOMATIC DIAGNOSIS

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Psychosomatic medicine represents an orientation in medical philosophy and practice, a perspective that attempts to evaluate the relation of personality factors and life situations to disease. Psychosomatic diagnosis thus depends on a discipline that requires, in addition to a knowledge of the manifestations of disease, a further understanding of its nature and its significance to the patient in terms of personality security. It is in this specific significance, this utility to the patient, that psychosomatic illnesses primarily differ and in a broad classification may be distinguished from other diseases. Many chronic illnesses produce changes in life situations that require some measure of personality adjustment. In many other diseases personality factors operate to permit a utilization of the illness for secondary gain, with resultant protraction of symptoms and disability. Yet a still broader segment of disease may be considered as primarily psychosomatic in that the structural alterations of the body, and various psychologic manifestations as well, arise from specific patterns of reaction to personality conflict and insecurity.

Patients with psychosomatic disease may show little or no evidence of emotional instability. The outward tension phenomena commonly associated with a neurotic disposition and with the psychoneuroses are often absent; the energy related to anxiety is effectively channeled in physiologic expressions of symptom formation. Such patients may feel that they have "inward nervousness," and indeed their calm and sometimes phlegmatic temperament is often abruptly lost if insecurity becomes excessive or if the walls of resistance built up around their illnesses are jeopardized. In psychosomatic illness, insecurity conflicts have been persistently and deeply repressed, substitutive symptom formation thoroughly established, and the whole complex reactive pattern hedged and protected with resistances. It is in the study of these resistances, which are so clearly shown in the attitudes and behavior of many patients and defensively overelaborated to the point of discrepancy, that a positive and rapid diagnostic key to the nature of the disease may be found.

The psychologic expressions and physical symptoms of primary psychosomatic disease derive from and are part of a conditioned biologic response, a total body illness that is dynamically determined and basically purposeful to the life of the patient. Studies of the significance of this purposefulness of the illness indicate its relation to integration of personality—its

development as a total organism compromise in an interaction of unconscious dynamic forces that perhaps threaten more serious and costly alternatives in adjustment. Thus primary gain is inherent in the protection afforded to the personality integration and identity of the person. Likewise, factors of secondary gain commonly become operative. Viewed in the framework of these considerations, the value of the illness to the organism and the basic dilemma of the patient are apparent. Although an ill person must consciously and rationally attempt to seek relief for manifest symptoms and disability, there are unconsciously motivated resistances to such attempts that block their success. Indeed, it might be expected that every dynamic resource of the organism would be called into action to protect the illness and maintain its expressions until the greater threat to personality security had been lessened or resolved. That such is in fact the case is attested by observation of patients' resistances: in attitudes, in free association and in specific behavior. Some of these resistances, noted with brief comment and illustrative case material, will be reported herewith.

RESISTANCE SYMPTOMS

Procrastination in Seeking Medical Attention.—Patients with psychosomatic complaints are seldom seen early in the course of their illnesses. Medical care is sought with reluctance, often only at the repeated insistence of relatives or friends. Not uncommonly it is months before the patient "gives up" and submits to an examination. This willingness to temporize is usually inappropriate to the severity of complaints and to the extent of the disability. It constitutes a discrepancy in behavior that is rarely observed in patients whose diseases are primarily due to external agents or unaccompanied by significant personality disturbance.

A farmer, aged 40, was brought to the hospital by ambulance after a sudden massive intestinal hemorrhage. His wife stated that he had suffered from stomach pains and dyspepsia periodically for the past five years but had never had any treatment except sodium bicarbonate, self prescribed. In spite of urgent requests from his family he had consistently refused to consult a physician. The patient was found to have a large duodenal ulcer. When later questioned as to why he had put off medical attention so long, he replied vaguely that he had so much work to do that he couldn't "find the time." Actually his symptoms had frequently prevented him from working for days. When this discrepancy was pointed out to the patient he stated lamely that on such occasions he felt too bad to go through with a lot of examinations.

Self Treatment.—Many patients indulge in self diagnosis and protracted self treatment, despite the availability and rationale of adequate medical care. Although it is normally optimistic to hope that an acute or mild illness will be resolved with time and a few comforting household remedies, to maintain such expectations in

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the face of chronic discomfort and disability represents an illogical and discrepant attitude. It is perhaps the most reliable characteristic of patients with psychosomatic illness that in submitting to medical care they reserve for themselves a greater independence of action in decisions as to choice of procedure and detail of treatment. The attitude is "fussy," rigid in limitations and demands, and gives the unmistakable impression that they need to manage the case themselves. When such patients put themselves "entirely in your hands" either they are extremely ill or because of some motive that may be later revealed they are expressing a wish opposite to their unconscious intention and subsequent behavior.

A bookkeeper, aged 42, was brought to the clinic by his sister, who stated that he had complained of stomach symptoms intermittently for three years. At times his discomfort had been severe and disabling, with pain, nausea, vomiting and continual eructation of gas. The patient appeared to be convinced that his illness was caused by food idiosyncrasies and had eliminated one article after another from his meals. In addition, he experimented extensively with food fads and a variety of patent medicines. Early in his illness he had consulted a physician, once, and did not return because roentgenograms of the stomach which he thought "unnecessary" had been advised. On the present occasion the patient was found to have pyloric scarring from previous ulcer and a moderate degree of obstruction related to spasm. Arrangements made for treatment were not subsequently carried out by the patient.

Sabotage of Treatment.—In a competitive and energetic society a considerable amount of social pressure is exerted on persons that are chronically disabled and complaining to provoke them to seek orthodox medical care. The number of individuals with psychosomatic illness who pay lip service to treatment, who go through the motions of adhering to some plan of improvement, is certainly legion. A catalog of the specific devices by which treatment may be counteracted and nullified becomes a pageant of rationalizations—all the devious means that persons employ to avoid doing what they consciously should do but unconsciously feel that they cannot do now. Physicians are more familiar with the acts of omission—broken diets, renewed habits, unfilled and unopened prescriptions, forgotten medications, fractured routine and disregarded advice—than with the basic significance of such behavior as compulsive, positive neglect that is specifically and dynamically purposeful.

An active physician, aged 43, was referred for cardiovascular study on account of recurrent symptoms of angina pectoris, first noticed five years previously. At age 40, following a moderately severe attack of pain, electrocardiographic tracings showed bundle branch block of the S wave type; previous electrocardiograms had been normal. Present studies revealed no significant abnormalities except a slight elevation of blood pressure and the heart block previously noted. This patient repeatedly indicated a desire to follow a moderately restricted and healthful regimen as carefully outlined by his physician. Actually, there was no real reduction in his compulsive overactivity. Directions as to midday rest, avoidance of tobacco, reduction in weight and limitation of work were not seriously entertained. An effort to improve life situations productive of insecurity and directly related to the cardiac symptoms was initiated and maintained with tardiness and great difficulty.

Broken Appointments.—The basic dilemma regarding treatment is shown more strikingly in the psychoneuroses, particularly when clear outward evidence of structural disease is lacking. An alignment of the forces for and against treatment is less subtle, the resistances rather ill concealed. In many instances only an

initial appointment is kept and it is apparent that the person has acquiesced in consulting the physician as a gesture only and is not seriously entertaining plans for treatment. The rationalizations in support of this behavior are rather gross: the patient finds it impossible to meet the physician's hours, impossible to take time from his own work, impossible to spend relatively small sums for treatment even when disability is causing much greater loss. The impediments to adequate medical care become many and insurmountable. Enthusiasm for treatment in a patient with chronic psychoneurotic illness is itself a rationalization and usually indicates that the patient will break treatment at the first opportunity.

A railway employee, aged 45, gave a history of excellent health prior to the onset of his present illness two years before. Since that time he had suffered continually from gastrointestinal complaints and from depression over his "inability to perform any useful work." His illness had cost over \$10,000 in loss of income and expenses. After months of urging, this patient had been finally persuaded by his local physician to come to a large medical center for thorough examination and treatment. When first seen, he expressed much enthusiasm and gratitude for this opportunity at last to "get at the seat of my trouble." Before the laboratory and roentgen studies had been completed, this man abruptly stopped his clinic visits, writing later that the examinations had taken too long and that the expense was more than he could bear.

Medical Shopping.—The addition of many intelligent patients to medical "window shopping" requires explanation. Numerous physicians are consulted one after another without giving any of them a satisfactory opportunity for systematized investigation of the illness. The common refrain "doctors do not understand my case" is as frequently related to the obstructive attitude and behavior of such patients as to the unskilfulness or lack of interest of physicians who attempt to treat them. The motives behind medical shopping are usually associated with an unconscious need for retention of the illness.

A man 40 years of age, whose chronic symptoms referable to the upper part of the gastrointestinal tract represented an anorexia nervosa equivalent, admitted that he had consulted fifteen different physicians during his two year period of illness. In each instance he had changed physicians after a few preliminary visits. Ignoring the fact that only limited occasion had been provided for study of his illness, his attitude expressed a need to regard his condition as obscure and misunderstood. This patient's home medicine cabinet was stocked with many partially tested prescriptions.

Limitation of Treatment.—Behavior outwardly opposite to medical shopping but similarly motivated is expressed in adherence to limited specialistic forms of diagnosis and treatment. In spite of the presence and persistence of general symptoms, a single major complaint is assumed by the patient to be the only significant abnormality; particular treatment for it is undertaken year after year, to the vigorous exclusion of more complete investigations. A frequently reiterated statement familiar to physicians is: "There is only one thing wrong with me and if I can just get that cured I will be all right." Popular trends toward extensive specialization in medical practice encourage such circumscribed treatment, and in this setting the broader aspects of psychosomatic illness may be effectively neglected.

A woman, aged 45, gave a history of chronic nonseasonal nasal obstruction—"chronic sinus"—that had caused inconvenience and partial disability for twenty years. During this entire

period she had remained under treatment for the local complaint, alternating groups of visits between her rhinologist and allergist. Several operations on the nose and accessory nasal sinuses had been performed. Belated attempts to secure for this patient a general medical study that would include an evaluation of other important symptoms were met with persistent opposition.

Patronage of Cults.—Patients with psychosomatic illness have a strong leaning toward treatment by unorthodox practitioners and substandard methods. This trend may be seen in a willingness to accept lay advice, hopeful reliance on patent remedies, an enthusiasm for medical fads and support of the cults. There is an inappropriate bent and loyalty to methods and systems that temporize with illness through policies of suggestion, reassurance and palliation. Such patients plainly show a need for constant symptomatic treatment instead of a recourse to serious investigation of the nature and cause of the total problem of their illness.

An active successful business man of middle age was referred for diagnostic study on account of the recent development of precordial pain. Routine investigations disclosed moderate heart enlargement, rather severe hypertension (230 systolic and 130 diastolic), and minor electrocardiographic defect. Renal function was not measurably impaired, nor was prostatic obstruction demonstrable. The large peripheral arteries were not perceptibly sclerotic; however, there were distinct changes visible in the vessels of the retina. This patient, on his third visit, "recalled" that high blood pressure had been noted four years previously during an insurance examination and that insurance had been denied. At the time, he had been actively involved in business matters and was suffering from fatigue and "nervous headaches." Although he had been advised to obtain a careful medical examination, the patient decided instead to try chiropractic treatment, which had been continued regularly since. In spite of the admitted fact that the relief from manipulative treatment had been transient and minimal, the patient expressed great satisfaction with his "adjustments" and some concern lest he be requested to discontinue them.

Vagueness and Evasiveness.—Practitioners are familiar with the tendency of many patients to confuse and obstruct medical study by a vague and incoherent recital of complaints. The actual facts of the history such as the date of onset, the exact nature of symptoms and the time of appearance of additional factors in the illness may be forgotten, or recalled with uncertainty and seeming indifference. To wrest an accurate and sequential history from such a patient may require more labor and patience than the physician is willing or able to expend. When purposefully led into a digression—some subject unrelated to the illness—the patient may show an alertness, interest and mood quite at variance with previous diffidence. Exhibited in an intelligent person, vagueness represents an unconsciously motivated technic of resistance.

A salesman, aged 36, complaining of palpitation, shortness of breath on exertion, sharp transient pains over the precordium and inability to work, was referred from a cardiac clinic where a diagnosis of neurocirculatory asthenia had been made. Attempts to secure a consecutive history of the illness were at first unrewarding; the patient's entire attitude was one of vagueness and indifference, of allowing the examiner to probe for and approximate the salient facts. When asked the nature of his trouble the patient countered, with some satisfaction: "That's what I came here to find out." Several interviews were required to overcome a tedious and frustrating game of hide and seek for the pertinent details of the history. Led into topics unrelated to the illness and the insecurity conflicts involved, this man talked with clarity and responsiveness.

Circumstantiality.—Akin in motive to vagueness, excessive preoccupation with irrelevant detail is a common symptom in psychosomatic illness. In an endless and seemingly trivial and digressive recitation, the core of any important question may be avoided and go unanswered. The digressive material is too foreign, too remotely connected with insecurity conflicts to serve a specific ventilative function. Circumstantiality is certainly a pressure of speech, as any physician will testify, but it is more related to a habit of garrulousness than to the cathartic speech pressure encountered in initial interviews of patients with tension and anxiety, and its value from the standpoint of free-associative information is almost nil. Circumstantiality may be regarded practically as a resistance symptom that permits the patient to filibuster, to keep the floor and avoid a direct and pertinent approach to the basic problems of the illness.

A chair-ridden woman, aged 50, was observed frequently during a period of six weeks in an attempt to initiate beneficial treatment of moderately advanced deforming arthritis and accompanying symptoms of tension, fatigue and debility. Since the beginning of her arthritic symptoms, five years previously, this patient had successfully resisted efforts to institute their appropriate treatment. On the present occasion, attempts to obtain information relative to the total illness and to the personality factors involved were constantly obstructed by the patient's ready circumstantiality and distractibility. Each consultation period was flooded with exhaustive details of her numerous symptoms, feelings and political reflections and the remarks and characteristics of her family and friends. Efforts to steer the sense of the interviews into a connected framework were repeatedly blocked by digression. Reliable reports of the external contributory factors in this patient's illness had to be obtained from members of her family.

Complacency.—The classical attitude, "la belle indifférence," so commonly observed in hysterical conversion, has a counterpart in the masked diffidence that usually accompanies psychosomatic illness, particularly if the disease has progressed to some tangible and socially recognized pattern of structural defect. In addition to the primary utility of the illness, factors of secondary gain are often in operation; the patient's unconscious and sometimes conscious needs to retain the symptoms are reflected in resistances to their significant relief. Thus in psychosomatic illness the patient is confronted with a basic behavior dilemma: a rational need and external social pressure to find relief for illness and disability; an opposing internal, compulsive, dynamic and unconscious need to perpetuate the conditioned biologic response to threats or assaults or situations that engender insecurity. A clear and familiar illustration of the result of this fundamental opposition of forces may be recognized in "simple" obesity, a psychosomatic condition in which resistances to treatment are obvious and later admitted—despite their versatile disguises.

A housewife, now aged 40, stated that her average weight had been 115 pounds (52.1 Kg.) until ten years before. At that time, after a period of tension, weakness, fatigue and restlessness related specifically to change and insecurity in her life situation, she began to gain weight rapidly. With the exception of minor remissions (30 pounds [13.6 Kg.]) due to painfully forced dieting, her average weight for the past nine years had approximated 200 pounds (90.7 Kg.). During this period the patient had submitted to many examinations, had experimented irresolutely with special diets, exercises, massage, gland extracts and similarly accredited but really inappropriate measures. No plan of treatment had been loyally maintained beyond a few months. Prior to her illness this patient had

worked as a model, was rather noted for her attractive appearance. An intelligent person, she was aware of the longevity statistics relating to overweight and not insensitive to the esthetic implications and physical discomfort inherent in her obesity.

Relief Afforded by Physical Defect.—The significance and role of resistance phenomena in psychosomatic disease are adequately confirmed by observation of accompanying attitude and behavior symptoms that clearly indicate a need for the development of physical manifestations. The utility of demonstrable structural abnormality is shown indirectly in the zeal with which patients often search for tangible defect, their almost obsessive conviction of its presence and the obvious relief that follows the detection of a minor alteration of the body even if patently unrelated to the prominent symptoms. Many patients are frankly conscious and expressive of this need: "Doctor, if you can just find *something* the matter, I will be all right; I have been to so many doctors and they cannot seem to discover the trouble or understand my case." Inconsequential and borderline deviations from the normal, discovered years before, may be recalled and hopefully accorded an emphasis that could not be logically warranted.

An infantry soldier, aged 36, complained of severe headache of the muscle tension type which had developed three weeks previously after an exhaustive combat experience. No recent injury had been sustained; the patient had not been exposed to blast effects. Physical and neurologic examinations were normal. Evidences of tension and fatigue were pronounced. This man was convinced that his headache was due to unresolved results of a cerebral concussion experienced nine years before, although recovery from that injury had been uneventful and there had been no interim symptoms or disability. The occipital protuberance, apparently just discovered by the patient, was hopefully indicated as a sign of recurrent trouble from the old accident.

When the need and quest for physical defect is strong, symptoms of hysterical type may be projected, involving topographically "weak" areas such as scars, symbolic locations, or as conversion overlay phenomena complicating the patterns of physiologic dysfunction and structural change in psychosomatic disease and, as well, in other forms of disease or injury.

A soldier with "combat fatigue" and progressive anxiety symptoms sustained a penetrating flesh wound of the thigh and was evacuated to a general hospital for treatment. Nerve injury was absent. Coincident with surgical healing, complete anesthesia developed with "paralysis" of the entire lower limb. When this complication was shown to be hysterical in nature and the function of the limb restored, severe anxiety symptoms reappeared and the patient complained of pain and weakness in the area of an old herniorrhaphy scar.

The dynamic forces underlying accident proneness are worthy of further study in relation to their similarity to the mechanisms under discussion. It is seldom that persons subject to repeated accident do not indicate in some indirect but significant manner the basically purposeful negligence associated with their injury. A recent patient, in recurrent depression and under particular circumstances requiring a cloak for manifest disability, stated after her third accident: "I wish I could have ended it all when I hurt my back." The beneficial effects of intercurrent illness on persons suffering from psychoneurotic disease have long been noted by practitioners and have been the subject of a recent report. Of searching interest and significance will remain the often prompt and satisfactory relief

of tension and anxiety that so commonly follows the development of physical symptoms and tangible structural defect.

A woman, aged 37, was observed over a period of two years for tension and fatigue symptoms related to domestic maladjustment and personality insecurity. During this time repeated examinations were requested and performed to exclude pulmonary tuberculosis, which the patient feared obsessively "on account of an early family contact." Abrupt cessation of anxiety and general complaints occurred when chronic non-seasonal bronchial asthma developed. The patient expressed great relief "since the first attack of wheezing," and insisted (perhaps with accuracy) that the asthma had been "under the surface all the time." Allergy studies could not be obtained due to inability of the patient to "feel a need or find the time for further medical work now."

Fear of Personality Study.—Along with a conviction of physical defect—a wishful self persuasion that the illness is "entirely physical" perhaps founded in the converse fear that it is possibly "mental"—many persons with psychosomatic illness exhibit hypersensitivity and intolerance to personality study. This resistance, often firm and aggressive, finds its greatest expression in the frank refusal of the majority of patients to undertake psychiatric interview even in a preliminary or tentative way, and constitutes an effective block to any formal psychiatric treatment of psychosomatic disease on a broad statistical scale. Even in routine medical study, tactless or hasty methods of approach to personality inventory may lead to open dissatisfaction, anger, letters of protest, refusal to follow ordinary clinical procedure, and not infrequently lead to the patient's quitting the hospital or the physician. Such behavior assumes particular significance at active medical centers, which may be considered "courts of last resort" for many sick persons. After long chronic illness and disability and expense, after repeated trials of new medicines and new physicians and after general failure to recover or improve, the patient has been persuaded to make the necessary arrangements, undergo a long trip and submit to hospitalization. All of this effort, clearly the last to secure what must be thought to be expert study and treatment of the illness, is often inconsiderately thrown away. So bright a discrepancy in behavior demands explanation. Although it is beyond the scope of this report to discuss in detail what is known of the dynamic forces operative in such behavior, one fact seems apparent, the patient's need for an approach to recovery by this particular medical plan is outweighed by other necessities of the illness.

After three years of partial invalidism and extensive medical treatment for chronic idiopathic ulcerative colitis, an attorney aged 38 was persuaded to repair to a nationally prominent medical center for thorough study and treatment. Examination showed an inwardly tense, undernourished and slightly anemic person whose numerous daily stools contained much blood. On the hospital ward it was observed that the patient was intensely occupied with the rituals of his toilet, with petty details of his diet, with a slight inconstant elevation in temperature and with the art of securing a variety of medicines to guarantee sleep. An accurate medical history was obtained with much difficulty, the patient appeared strangely disinterested and repeatedly interrupted the interview to reiterate: "I know my trouble is due to an infection of some sort," and "there isn't anything mental in my case." An attempt to discuss common personality characteristics, in the most gradual and oblique manner, could not be tolerated by the patient, whose protests continued to be excessive and rationalistic. He became increasingly obtuse, difficult and demanding and finally left the

hospital after a total stay of six days, stating that proper treatment had not been started and that he was "too ill to be away from home and his local doctor."

Denial of Conflict.—Patients with psychosomatic disease frequently resist pertinent study by an initial and often persistent denial of significant personality insecurity or conflict. The protective need to maintain that personality factors are not concerned in the illness leads to illogical and unwarranted optimism and to a further minimizing of serious insecurities, situations and performance deficits. Their lives could not possibly be as secure and free from stress and worry as some of these persons (unconvincingly) describe them. If the physician probes prematurely in a search for conflict or associated repressed material, these patients' attitudes will become noncommittal and evasive, leading to the unmistakable impression that more is known than can be told. It is significant that numerous voluntary denials may be offered and repeated, for example: "I can't imagine what is making me so ill"; "I've told you absolutely everything I know"; "I wish I knew more about myself to tell you." If these patients remain under treatment they will surely find out more about themselves and their illness to tell, including an admission that they did not feel able to talk freely at first. This behavior is so commonplace that an illustration appears almost superfluous.

A woman of middle age who complained of severe and frequent migraine attacks insisted that her home life was secure and happy and went voluntarily into considerable detail to emphasize the congenial relations that existed with her husband and within her family circle. During this description, however, she frequently and perhaps ostentatiously displayed her left hand, on which no wedding ring could be observed. After several consultations in which examinations and discussions were deliberately restricted by the physician to the details of the headache symptoms, this patient became more confiding and in a sudden flood of emotion revealed a distressing and seemingly hopeless domestic situation later shown to have been a precipitating factor in her present illness.

Misleading Explanations.—Many patients with severe and deeply repressed conflicts unconsciously resort to devious methods of preventing their disclosure. If interrogation becomes too pertinent, substitute anxiety situations may be offered as plausible causes for worry and distress. The physician must note the discrepancies in these misleading explanations, evaluate the deeper resistances that provoked them, and proceed more gradually and cautiously in treatment.

A patient who had persistently denied any known cause for her tense and depressed reaction finally admitted, without emotion, that her disturbance had been precipitated through worry over the health of her sister. Although such a cause, on the face of it, appeared unlikely, further information disclosed that the sister lived 3,000 miles away, had not been seen by the patient for fifteen years and was not seriously ill. Additional study revealed a far more significant factor related to this patient's illness.

Acceptance of Previously Ineffective Remedies.—Many patients with psychosomatic illness respond with satisfaction and optimism to measures of reassurance and suggestion that are unsupported by study or accurate diagnosis and that are obviously of only temporary benefit. Such hopefulness is illogical and incompatible with the previous experience of the patient who, it may turn out, has reacted to identical treatment in this same way many times before. Actually, a seemingly gullible acceptance of facile explanation, advice and treatment serves to direct attention away from the

fundamental problem of the illness, and the relief obtained may arise in part from the successful avoidance of further disturbing investigation. Similar attitudes are adopted by patients who avoid a continuation of treatment by statements of improvement or cure that are unwarranted by the facts. Thus follow-up reports of patients with psychosomatic illness are particularly subject to inaccuracy and unless conducted by physicians in local community contact with the patient can hardly be credited.

A single school teacher, aged 30, gave a history of extensive treatment for dysmenorrhea. During a period of eight years she had lost several days from work with each menstrual cycle. On some occasions partial relief had been obtained by injections of hormones. After a brief interview and scheduled premenstrual injections of sterile water, this patient reported definite improvement in her symptoms for four months. When symptoms recurred, an attempt to institute adequate medical study was met with firm opposition; the patient was intent on continuing her basically unsatisfactory pattern of palliative treatment, and was outwardly hopeful that injections would ultimately effect a cure.

COMMENT

In psychosomatic disease the physician is thus confronted with a protean and paradoxical illness, a clinical syndrome that differs from others to which he is accustomed in that the patient appears to be fundamentally indifferent to diagnosis and to treatment and on further close observation is found actually to obstruct medical study. Although the patient obviously suffers much discomfort, disability and distress from structural defect, and from a conscious rational standpoint must wish and need to recover, there are in operation powerful unconscious dynamic forces that acted to initiate or protract the illness and still function to perpetuate it. Thus the conditions and circumstances requisite to recovery and even to study of the illness are from their nature complex and obscure and rarely accessible to early disclosure or resolution. Psychosomatic disease represents a life trend in integration of personality and in intersocial adjustment; it follows conditioned patterns of physical and psychologic reaction that are not amenable to any type of management aimed at early concise analytic diagnosis or prompt correction. If the patient proposes to undertake treatment for conscious reasons that are compelling, it is clear from the foregoing observations that for equally compulsive unconscious motives such treatment must be supervised, limited, perhaps even nullified to meet the internal necessities of the person as a whole. Human behavior in illness, as in other situations, is basically *determined*, largely predicated by "feeling" and intuitiveness instead of by "pure" reason. Patients with psychosomatic illness cannot immediately undertake total remedial treatment, cannot afford to entertain seriously plans that jeopardize their protective compromise with reality and unwittingly threaten them with a more fearful danger to personality adjustment.

However, treatment of part of the illness, the local somatic end organ manifestation—for example, peptic ulcer—may be accepted when there are illness equivalents in treatment that provide substitute secondary gains, and when primary cathexes may be reallocated or displaced into other channels of physiologic (psychologic and sociologic) expression. Likewise, it must be recognized that many patients appear to give up their resistances or to succumb to cumulative pressures for study and treatment only when, through alteration of internal or external factors in the basic insecurity situation, a resolution of the total illness is impending. On

the other hand, patients who injudiciously allow external pressures to force them into premature or hasty treatment and decision may become seriously anxious and depressed unless illness equivalents have been effectively established. A physician-patient relationship may constitute such a substitution and in competent treatment should serve as a bridge to the development of other identifications compatible with reeducative goals and health.

SUMMARY

Reliable criteria for the prompt recognition of psychosomatic disease may be found among the unconsciously motivated resistance symptoms that accompany the illness and indicate its utility to the patient. These resistances, manifested by attitudes and behavior basically obstructive to medical treatment, constitute objective phenomena that serve to indicate the dynamic biologic significance of the total illness.

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DERMATOLOGIC MANIFESTATIONS IN PSYCHIATRIC DISORDERS

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One may look at psychosomatic medicine from three different views. The first is that in which signs and symptoms in somatic organs are seen to accompany specific mental disease, such as dementia precox. This relationship is well known and accepted. An illustration is the depressed phase of manic depressive psychosis which is frequently accompanied by periodic tachycardia, amenorrhea or loss of weight. The second aspect of psychosomatic medicine suggests that specific somatic diseases are influenced by mental states. Thus, peptic ulcer is aggravated when the patient is distressed or under tension and apt to be improved during periods of physical and emotional relaxation. The third consideration is the one that is least established, but nevertheless the most discussed recently. This maintains that repeated emotional or psychologic stress may actually produce certain somatic diseases, such as asthma, essential hypertension or eczematoid dermatitis.

The present discussion will concern itself with only the first view—namely, definite mental diseases and their cutaneous accompaniments. Specifically, we wish to discuss abnormalities of the skin and its appendages which are indexes to well known psychiatric disease entities. Those dermatologic changes are not included which result from neurologic diseases, such as the excessive flow of sebum in the parkinsonian state or the trophic ulcers of syringomyelia or tabes.

DERMATOLOGIC SYMPTOMS ASSOCIATED WITH MENTAL DISORDERS

Several dermatologic symptoms are found only in the presence of mental illness. Others are nonspecific and may be met in various disease entities, physical or mental. Itching and paresthesias may be indicators of an accompanying mental disorder, though, of course,

they are most often due to primary dermatologic changes. We should suspect the possible presence of a psychiatric disorder when itching is intense, abrupt or of recent onset and not explainable or accompanied by some cutaneous change or systemic disorder. Paresthesias, however, are much more often due to psychiatric disease than is itching. They may be universally distributed, but are more commonly confined to certain portions of the skin. The most frequent sites are the scalp, face, neck, arms, hands and abdomen. These disturbed sensations are described by the patient as a feeling of numbness, tingling, burning, drawing, droplets falling on the skin, a sensation of hot or cold or of insects crawling on the skin. The chances that a mental aberration is at fault mount and increase the more intense and persistent these abnormal sensations are, providing that organic neurologic disease is excluded. A psychosis or serious mental disease is still more likely to be present when these unpleasant paresthesias are elaborate or bizarre.

Paresthesias may express themselves as unclassified unpleasant sensations of hairy parts, especially of the scalp, axilla and pubis. There may be complaints of frank pain or dermatalgia. Patients with mental disease may feel that their hair has been converted to snakes or that it seems like wood or turned to ice. Itching and paresthesias may be present in all the accessible mucosae as symptoms of mental disease. The well known burning tongue syndrome may be an example. In the same way, a raw sensation of the throat or a stinging sensation of the rectum or vagina without evidence of any local disease process or neurologic disturbance may have its basis in an abnormal mental state. In addition, these disturbed sensations cannot be accounted for by allergic or metabolic studies or tracked to any rational source. They are, moreover, accompanied by mental manifestations of the underlying neuropsychiatric disorder if one but looks for them.

Paresthesias of the Pharynx and Tongue Due to a Depression.—A 52 year old man complained of an extremely distressing "raw" feeling in the throat and the mouth and of the tongue which had lasted six months. He was seen by a general practitioner first, then in succession by a dermatologist, an otolaryngologist and finally a psychiatrist. In addition to the symptoms of the throat, mouth and tongue, the patient was found to have great nervous tension, a feeling of pressure on the head, mental depression that made him consider suicide, insomnia, anorexia and loss of his ability to enjoy previous pleasures. He avoided social activities and lost 14 pounds (6.4 Kg.) in weight. He had had a similar episode twenty-eight years before which lasted four months. A diagnosis of manic-depressive depression was made, and psychiatric treatment gave him considerable relief.

Paresthesias Due to Schizophrenia.—A woman 26 years old was seen who complained of a feeling of dryness and tingling of the skin of the trunk, axillae and groins. This had lasted for a year and was becoming worse. Many medicaments given internally or used locally, as well as roentgen rays, gave no relief. A psychiatrist found that the patient had a feeling of strong tension and irritability. The menses were scant and irregular, her appetite decreased and there was loss of weight. She had perplexed feelings about numerous things, became indifferent to her home and children and neglected her personal appearance. She had strange thoughts, such as skepticism as to whether she was really married, the identity of her children and unusual preoccupation with religion. Her husband felt she had changed a great deal during the last several months. The patient herself was unaware of these transformations, although they were obvious to her family. A diagnosis of schizophrenia was made.

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Excessive washing or skin cleansing may be another expression of a psychiatric disorder. Such action, considerably beyond what obvious soiling can justify, should always arouse suspicion. It usually springs from fear. It may be the response to a delusional idea. The patient may, for example, believe erroneously that he will contract syphilis by contact with familiar objects, such as doorknobs, tools, eating utensils or clothing. This may cause him to wash his hands after each such contact, or he may attempt to clean or wipe these objects before touching them. He may handle objects with gloves or interpose paper or cloth to prevent contact with the bare skin. Some are fully aware of excessive hand washing and admit it readily but explain this as an irresistible impulse. They know that it is not rational. They may not rest their attempts to cleanse themselves with only soap and water but use alcohol, all manner of chemicals, or abrasives, such as sandpaper and pumice. These busied and consuming ablutionary pursuits may not be confined to the hands, but involve the scalp, the genitalia or the entire body. The presenting symptom to the dermatologist in these cases is a dermatitis of varying grades of acuity. The skin may become dried and itch as evidenced by scratching. The most common manifestation is a dermatitis with glove distribution. Simply to remember that such cutaneous changes may overlie a disordered mind proves gratifying occasionally when it helps to clarify a syndrome which would otherwise be obscure.

Excessive Hand Washing Due to Manic-Depressive Depression.—A 43 year old white man presented himself for the treatment of a dermatitis of the hands. There was a subacute dermatitis of glove distribution that included the wrists. He had been washing his hands at least fifty times a day after contact with doorknobs, tools, table surfaces or other commonplace objects. He was afraid of contamination by germs. The patient admitted being nervous for the last eight months with irritability, restlessness, unmotivated mental depression, lack of appetite, insomnia, a feeling of pressure on top of the head, tightness in the throat and the excessive use of alcohol to relieve his symptoms. He remarked spontaneously that he had lost his prior enjoyment in his work. There was a similar episode four years before that lasted two weeks, but he did not recall that he had had the same fear of contamination by germs. There was considerable symptomatic relief with psychiatric treatment.

There is a large number of persons familiar to every dermatologist who seek relief from normal or physiologic changes about which they become obsessed. This group is characterized by excessive concern over what most persons come to accept as of the normal pattern. These patients become greatly exercised by the thinning hair of middle age or even baldness, graying hair, the appearance of a few additional facial hairs, nevi, dryness of the skin or its oiliness, etc. In some cases, this concern can be rationalized on the basis of vanity, dependence of one's livelihood on a good or a youthful appearance, or marital insecurity. In spite of these plausible excuses, however, it is the excessive concern which should alert one to the possibility of an underlying neuropsychiatric disorder. This possibility becomes more probable if the alterations of the skin or of its appendages are slight or if the worry represents a change of personality pattern or interferes greatly with the patient's happiness. What is significant is the unreasonable and excessive degree of the complaint. In this same category may be included the person who reacts unreasonably to actual pathologic changes in the skin, threatening and feeling justified in suicide because a patch of psoriasis does not yield to treatment.

Excessive Concern Over Falling Hair in a Personality Disorder.—A 45 year old man was seen who complained about the excessive fall of his hair. He had been to various "institutes" and consulted various physicians as well as tried numerous preparations to combat baldness. There was a moderate thinning of the hair over the crown without accompanying seborrhea. The patient was obviously vain and overdressed and was found to be egotistic and self centered. He was expelled from two colleges. He lost several jobs and failed twice in business. His family said he was garrulous, negligent and irresponsible and could not sustain any effort. During the preceding years he did not work, while the family support came mainly from his wife's employment and that of an adolescent daughter. His loans from friends had to be repaid by his brother. He was taking increasingly to alcohol, as he said, to drown his miseries. The diagnosis was that of a personality disorder.

The antithesis to this last group of subjects is the one that is inordinately indifferent to and negligent of dermatologic disease of the kind which should call for serious attention. This may represent a trait of character and be the stoic's attitude toward his responsibilities to himself or family. If, however, such lack of concern is a change from that which was present previously, one should think of the presence of a neuropsychiatric disorder.

Epithelioma of the Lower Lip in an Indifferent Schizophrenic.—An unmarried man, 39 years old, was seen with an epithelioma of the lower lip. He had consulted with the dermatologist only after strong pressure was exerted by his mother. The patient absolutely refused to cooperate and permit any treatment of his lip lesion. He was subsequently seen by a psychiatrist who found that the man was uninterested in any work, unemployed for five years and indifferent to his self support. He had been in a hospital when he was 28 years old and was said to have had catatonic dementia precox. Six months after his release he returned unsuccessfully to his job as a machinist. He then became a stock room attendant, freight handler, janitor and lastly a night watchman. He lost each job through indifference and negligence. He was excessively religious and rarely left home. The psychiatrist found the man apathetic, responding slowly to questions, uninterested in his future and without insight into his present state. His conversation was halting, he uttered no spontaneous thoughts and some of his responses were irrelevant. A diagnosis of schizophrenia of the simplex type was made.

Dysfunction of the autonomic nervous system may give rise to dermatologic complaints, such as excessive sweating, feelings of warmth, blanching or flushing and blushing. These symptoms may be due to neurologic disease, but they frequently are part of a psychiatric syndrome. Whenever one encounters such autonomic changes referable to the skin it may prove valuable to look for the signs of a psychoneurosis or a depression or some other psychiatric disease which may underlie the patient's complaints.

Complaints based on delusional belief are always of psychiatric significance. They frequently involve the skin. Such patients entertain an opinion which is false and that no amount of evidence from any source will correct, and because of this erroneous opinion they will display unreasonable and bizarre conduct.

Delusion of Cutaneous Infestation Probably Due to Schizophrenia.—A 55 year old woman showed numerous deep excoriations and tunneling of the skin. A diagnosis of neurotic excoriations was made. She wanted relief from the bugs that were growing and living in her skin, whose movements she could feel and whose eggs she could see with the aid of a lens. She had become very nervous in the last year, lost interest in her household, husband and son. There was an unexplained feeling of nervous tension at unpredictable intervals

which was accompanied by palpitation and numbness in the head. She was seclusive from friends and relatives and bore vague feelings that neighbors considered her queer and that they gossiped about her neglected personal appearance and home. A provisional diagnosis of schizophrenia was made.

The nature of the delusion may be extremely varied. Many patients believe their skin to be infested or the seat of parasites, insects, germs or bizarre inanimate materials. They profess to feel, see and even hear them. Some believe that the skin is being transformed into leather, paper or some other nonliving material. Others with nocturnal itching or paresthesias weave and elaborate some delusional idea, which becomes a fixed belief in explanation of what is felt. It may be believed that some specific agent is acting, such as poison in food, or is contaminating the air that is breathed or is acting nefariously by means of mysterious electrical influences.

Self-induced injuries should excite interest in a patient's neuropsychiatric condition. The more obvious examples in this group are those whose injuries are gross or bizarre, such as the impulsive shearing off of the hair by a woman. A few despoil themselves for sympathy, avoidance of unpleasant responsibility, gain or other motives. They may or may not admit their guilt. The majority of the subjects in this category, however, have no apparent desire to mutilate themselves, nor do they understand the significance of their acts.

Neurotic Excoriations in a Schizophrenic.—A 19 year old boy was seen who had acne of the face, shoulders and back. There was a number of deep excoriations at these same sites which he denied making. He was apathetic and totally indifferent to the cutaneous lesions. He manipulated unaware of what he was doing. His mother said he had had a "nervous breakdown" for three months, four years before, when there were insomnia, intense agitation, hearing of strange voices, complete loss of interest in school and other activities and a delusional belief that spies were peering through the windows. Recovery was complete, but within six months there appeared a slow deterioration in the boy's ability to study. He had to leave school and gradually thereafter showed increasing loss of interest in the usual adolescent activities. He was unable to work, did not talk for periods of days, became seclusive and irritable. He sat idly for hours, while he picked at his face and gazed blankly. A diagnosis of hebephrenic type of schizophrenia was made.

Feigned Eruption Without Neuropsychiatric Disorder.—A woman, 43 years old, had a traumatic lesion of the thigh which did not heal with appropriate therapy. Nothing in a thorough examination could account for the continued presence and extension of the lesion, although there were several times when considerable improvement gave way to relapse. The patient was taken to a hospital where a cast was applied over the thigh. After three weeks, the lesion was found completely healed. A psychiatrist who visited the woman at the hospital found no basis for a diagnosis of any psychiatric disorder but called attention to the fact that her lesion made it possible for her to receive workman's compensation.

Pulling of Cuticle and Nail Biting in a Neurosis.—An Italian woman, 32 years old, complained of soreness of her finger tips. There were several paronychias, the periungual tissues were traumatized and the nails short and irregular. She admitted that she was preoccupied with biting her nails and pulling the cuticles and that this had been going on for several months. The patient said that she was doing this because of her nervousness, which was brought about by her troubles. These were moving into her father-in-law's because of poor economic conditions and constant family bickering. She experienced again her old "stomach trouble," which was a feeling of bloating, fatigability, increased irritability and sensitiveness. She had no depression or derogatory ideas or inability to enjoy her usual pleasures. She could not fall asleep, but her appetite

and weight were unchanged. There were spells of heavy breathing and faintness after her many arguments. A diagnosis of psychoneurosis was made, and improvement followed psychiatric treatment.

COMMON PSYCHIATRIC DISORDERS ASSOCIATED WITH DERMATOLOGIC SYMPTOMS

Instead of considering the bald symptoms themselves, it may be worth while to give some thumb nail sketches of psychiatric entities often associated with dermatologic complaints. Many other mental disorders not described here may have cutaneous components. In this incomplete recital, we shall limit ourselves to a discussion of only four of the most common psychiatric states.

Perhaps in schizophrenia or dementia precox, more so than in any other psychiatric disease, the patient is apt to consult the dermatologist early. He seeks advice about some cutaneous sign or symptom long before the need for psychiatric attention is obvious to either the patient or his family. In dementia precox, the patient is particularly apt to develop delusional ideas referable to his skin or its appendages. The delusional belief may be that the patient is infested with parasites or that his skin has been tanned to leather. Endless variations of such complaints may be encountered. These and others of their kind should arouse suspicion that the patient may have schizophrenia. Persons with self-induced lesions should likewise be suspected, especially those who do not appreciate their own guilt or the extent of their inflictions. They may pull wads of hair from the scalp, gouge the skin or busy themselves with endless picking, scraping, scratching or cutting of the skin. This may result in far flung infection, denudation, tunneling or canalizing not only the skin but of the accessible mucosae as well. The hair may be disturbed in diverse ways and the nails mutilated. Bizarre paresthesias may indicate an early schizophrenia. There may be the sensation of ants scurrying over the surface of the skin or insects titillating some particular site. There may be the feeling of touching ice or the fall of drops on the skin or a sensation of being constricted. In addition to these symptoms many patients will show an unusual preoccupation over normal physiologic changes of the skin and hair.

Trichotillomania Due to Schizophrenia.—A 10 year old white girl was seen in the dermatology clinic for loss of hair. There was a partial alopecia over the crown, which extended forward to the anterior hair line. A diagnosis of trichotillomania was made. During the interview with the mother, the patient was seen to twist and turn her hair, apparently unaware as she gazed blankly in the distance. The mother had noticed a slow progressive change in the child's personality during the preceding two years. There were irritability, sensitivity and loss of interest in the usual activity of children. She preferred to sit alone, mute for extended periods, and showed impulsive cruelty to a younger sister. She laughed or cried on little provocation, was markedly apprehensive and showed no understanding of her change in reaction to school, her parents or playmates. The patient vigorously denied that she herself was guilty of pulling out her hair.

The course and symptoms of schizophrenia are extremely varied, and a listing of them is difficult to compress into a small space. The disease appears in childhood or adolescence in many cases and is usually progressive. It persists for years or decades with fluctuation in its intensity and extensiveness of its symptoms. It tends toward progressive deterioration and ultimate mental incapacity. Early in its course there may be an unreasonable and exaggerated irritability and irascibility with outbursts of temper on slight

provocation. Often there may be impulsive speech and action inappropriate to the circumstances. The commonest symptom is an insidious progressive loss of practical efficiency. The patient makes an increasing number of errors, is neglectful and shows less responsibility. There is apathy and indifference to persons and interests with which the patient was previously occupied. Frequently there develops a feeling of nervous tension or uneasiness, inability to concentrate, depression or apprehension. Delusions and hallucinations are characteristic of schizophrenia, though they are not constant. There are bizarre habits of conduct, asocial and antisocial tendencies, laughing and crying on little or no provocation and refusal to speak for hours. There are perplexed and disordered mental processes about such familiar subjects as family affairs. Insomnia develops. The subject frequently loses much weight, has amenorrhea, unexplained cold, cyanotic fingers and toes and other physical changes. Often there is a total lack of insight into or awareness of the presence of these grave and numerous mental and physical changes. The cause of this disease is unknown, though there is no dearth of theories.

In the depressed phase of manic-depressive psychosis there are itching and paresthesias of the skin and mucous membranes and excessive concern over physiologic changes, such as falling hair or changes of pigmentation. Autonomic disturbances referable to the skin occur frequently, and dermatitis may be induced by excessive cleansing, but, in general, delusions about the skin or its appendages occur infrequently. The depressed phase commonly referred to as a "depression" or "melancholia" is relatively common. This may be mild enough to escape notice or severe to the degree that requires institutional care. This syndrome tends to have a familial incidence, though its cause is unknown.

Manic-Depressive Depression Producing Excessive Concern About the Texture of Skin Over the Face.—A 20 year old unmarried woman complained of nervousness, which a gynecologist did not relieve by the administration of hormones. She was depressed, lost interest in recreation, suffered periods of panic with dread of impending disaster, became fatigued easily and slept poorly. She had lost 15 pounds (6.8 Kg.) in weight, was markedly critical of herself and was obsessed that her face, as she said, "looked awful." She made much about her skin, which she believed coarse and pasty. This concerned her so deeply that she withdrew from and shunned all company. No precipitate stress could be found for her illness. This improved after three months of psychiatric treatment but recurred in a milder form six months later.

Its episodic character is the outstanding feature about manic-depressive psychosis. These attacks may last for only a few days or last throughout a number of years. There may be dozens of the attacks or only one. Remissions occur in every case and are nearly always complete, though they may last only several hours or extend for the duration of the patient's life. The most important symptom is mental depression or sadness which cannot be justified by external circumstances. There are many other physical and mental symptoms, such as excessive fatigability, insomnia and loss of appetite and weight, as well as a distressed feeling in the head, chest, abdomen and extremities. Mental symptoms are invariably present but are often not mentioned spontaneously and consequently are often overlooked. The patient no longer enjoys what were formerly pleasures, such as friends, food, music or some hobby. Loss of initiative accompanies this lessened interest in usual pursuits. These patients disparage themselves

and their ability, feel inadequate or helpless and believe that they are despicable and worthless. They are distressed with baseless fears of impending insanity, brain tumors, cancer, syphilis or heart disease. There are episodes of panic about nameless impending disasters. There are excessive irritability and sensitiveness and poor powers of concentration. Unprovoked crying spells are exceedingly common. There is complete insight and cruel awareness of their symptoms and disability in contrast to what is found in schizophrenia. These patients suffer intensely and are eager to cooperate to relieve themselves.

A psychoneurosis is less apt to have a cutaneous presenting symptom though it is a common psychiatric disease. Autonomic phenomena in the skin, such as excessive sweating and flushing, are frequently part of a psychoneurosis. Occasionally there is itching, but paresthesias, such as tingling, numbness or the feeling of coldness, are commoner. Excessive cleansing is seen less frequently than in manic-depressive psychosis or in schizophrenia but excessive concern over physiologic changes is seen more frequently, as well as self-induced injuries, especially of a minor character. There is picking of cuticles, biting of nails and excessive squeezing of blackheads.

Excessive Concern Over Sagging Skin About the Face Due to a Psychoneurosis.—A 46 year old woman said she had "gone to pieces" during the last six months coincident with being abandoned by her husband, to whom she was devoted and married eighteen years. She had insomnia, anorexia, weeping spells, tremulousness, irritability, fatigability, a clutching sensation in the throat, a feeling of crushing pressure on the head and frequency of urination and lack of ability to concentrate. Her most distressing thought was concerned with a fixation about the sagging, redundant skin of her face, which she felt was partly responsible for the husband's defection. She tried many kinds of lotions and went to several dermatologists, all of whom minimized her complaints and just dismissed her.

A psychoneurosis, or, more simply, neurosis, is a specific mental disorder induced by intolerable mental stress. The factors setting up these strains may be economic want, fear of illness, marital unhappiness, overwork or others. The intensity of the physical and mental symptoms parallels that of the induced emotional turmoil. These symptoms include fatigability and physical distress without organic changes, irritability, restlessness, sensitiveness, emotional upheavals accompanied by insomnia and complaints about tremulousness, excessive perspiration, tachycardia, light-headedness or other "functional complaints."

Those with personality disorders constitute the fourth and last of the large groups of patients with mental disorders that frequently present cutaneous symptoms. Itching often is severe but paresthesias and excessive washing occur less commonly. Exaggerated concern over physiologic changes of the skin and hair are seen frequently in this group. There are never delusions about the skin, but, as in the psychoneuroses, there may be self-induced injuries and autonomic changes. It is in this group with personality disorders that self-induced injuries are found very frequently.

Itching Due to a Personality Disorder.—A 21 year old young woman complained of intense pruritus about the vulva, anus and thighs. A thorough physical examination disclosed no abnormalities. She appeared to be uncomfortably tense and said that itching was exacerbated during periods of maladjustment. All her life she had been considered unstable emotionally, selfish, irresponsible, without perseverance and inadaptability. She was constantly in difficulty in schools, three of which she left

under duress. She abandoned her parents' home several times, was ejected twice from that of her brothers and four times attempted unsuccessfully to live with friends. She held six different jobs in four years, during which she went on numerous periods of idleness. The patient impulsively broke three engagements to marry and said that she simply did not belong anywhere. Each exacerbation of pruritus occurred with a new conflict, such as discharge from a job, ejection from her brother's home, breaking an engagement or an argument with her father.

The characteristics of this group are so varied as to make impossible their compression into a small space. These subjects have character traits which from childhood set them off as different from the accepted and normal pattern. These lead them to maladjustment and include emotional instability, deceitfulness, laziness, dishonesty, irresponsibility, lack of initiative, perseverance and adaptability, cruelty and selfishness. Because of such personality traits these persons are chronic burdens and nuisances to their friends and families. There are repeated transgressions of accepted conduct at school, work, or home or in the military service. This disorder may lead to alcoholism, delinquency or addiction to drugs.

COMMENT

These brief outlines of four common psychiatric diseases are not intended to enable the practitioner to make final diagnoses. He may, however, become more conscious of their presence in his patients, who otherwise are merely nuisances or have some sign or symptom for which he knows no convenient classification. His suspicion may be aroused by unusual changes in the skin, but he may confirm his feelings by a few adroit questions that reveal symptoms referable to the nervous system. It may be found that there are such characteristic symptoms as insomnia, mental depression, excessive fatigability, irritability, sensitiveness, periods of nervous tension and specific fears. The examiner may notice the patient's apathy, the latter's emotional tension or lack of insight. A few questions about the patient's record at school, at work, or in the home may point up a marked deviation from previous habits, conduct or attitudes or his poor adjustment during most of his life. The physician other than the psychiatrist, of course, cannot appreciate the full significance of the information which he has thus elicited, but he can better understand thereby the need which his patient may have for the psychiatrist's evaluation and treatment. Such therapy administered early is apt to be more successful, saves the physician face and unpleasant labor and the patient much distress.

It may not be amiss to repeat and list a few of the indexes that have been detailed:

Recapitulation of Dermatologic Indexes to Neuropsychiatric Disorders

1. Itching and paresthesias
2. Excessive washing
3. Excessive concern over physiologic cutaneous changes
4. Inordinate indifference toward and negligence of serious disorders of the skin
5. Autonomic cutaneous disturbances
6. Delusional beliefs about the skin
7. Self-induced injuries to the skin, feigned or admitted

Recapitulation of Indexes Suggestive to Psychiatric Disease

1. Marked deviation from previous habits, enjoyments, conduct or attitudes
2. Fatigability and insomnia
3. Exaggerated irritability
4. Impulsive speech and action
5. Loss of efficiency
6. Apathy and indifference
7. Marked nervous tension
8. Depression or vague apprehension
9. Delusions and hallucinations
10. Delusions and crying without provocation
11. Lack of insight
12. Loss of appetite and weight
13. Emotional excesses
14. Maladjustment to environment, chronic or recent.

The four psychiatric diseases which have been outlined appear to overlap considerably, with many symptoms, such as insomnia, common to all of them. There are, nevertheless, critical differences that indicate that they are separate disease entities. Psychoneurosis is an illness which results from inability to cope with emotional strain, but schizophrenia, manic-depressive depression and personality disorder are probably independent of environmental influences. Insight into and comprehension of the extent and significance of symptoms are almost always absent in schizophrenia and almost always present in the others. Personality disorder shows abnormalities throughout the lifetime of the patient, whereas in the other diseases he may be normal for many years prior and subsequent to the time of sickness. Manic-depressive psychosis is characterized by a remitting episodic course, whereas the others are less apt to show recurring attacks of the same illness.

SUMMARY

Certain symptoms and signs of the skin and its appendages, as well as the accessible mucosae, often are indicative of an underlying psychiatric disease. There is a brief description of four common psychiatric disorders in which cutaneous changes occur. Guideposts are suggested in the examination of the patient for the recognition of psychiatric disease. It is emphasized that earlier detection of an underlying mental illness improves therapeutic results and avoids prolonged misinterpretation and suffering.

ABSTRACT OF DISCUSSION

DR. MARION B. SULZBERGER, New York: When asked to discuss this paper I feared that I would be asked to say something about psychosomatic influences in dermatology. It was a relief on reading the paper to find that the authors had gotten away from the morass of conjecture, emotional bias and post hoc reasoning, and the interpretation of possible coincidences as being proved to be in unequivocal relationships of cause and effect. The tendency to regard what may be coincidence as proved causal relationship has been one of the great difficulties in the psychosomatic field. Dermatologists have seen many remarkable examples of the almost unbelievable coincidences. To illustrate I will tell you an account related to me yesterday by a young lady employed by a large medical publishing house. She was recently engaged in reading proof on a textbook on dermatology. Apparently it was a good book, because when she came to read proof on the sections dealing with bedbugs she began to suffer from manifestations similar to those described as caused by bedbug bites. She searched her home, and found that there really were bedbugs there. Later she came to the section of the text devoted to pediculosis pubis, and began to feel again the characteristic results of the infestation described. Even more strange to relate, on examination it was discovered that she had actually acquired the described pediculosis. Now how should this sequence be interpreted? Is it an example of psychokinetic effect (in which thoughts make matter take on certain forms and arrangements), combined with parthenogenesis (because in this case the matter also became alive)? Or was it merely an example of strange coincidences? One of the dangers in the present attitude of many physicians toward psychosomatic concepts is that they have found that by adopting this school of thought they need have no more therapeutic failures. This is convenient approach for the overbusy physician, who may often be tempted to say that those cases which defy causal diagnosis and which resist orthodox medication are, by exclusion, psychogenic. Moreover, this easy solution is made easier by the public's present maleducation on "psychosomatics" and because many patients like to think of themselves as being highstrung and very tense and nervous. All life is a series of emotional changes, so that he who wishes to can almost always find some relationship in time between the appearance and disappearance

of any symptoms and the appearance and disappearance of emotional strains. I enjoyed this presentation particularly because no conclusions have been drawn on the basis of purely chronological relationships.

DR. FRANCIS W. LYNCH, St. Paul: The authors' purpose was to aid in earlier diagnosis and, therefore, earlier institution of treatment of psychotic states by recognition of the dermatologic indexes which they have listed. In my opinion, after recognition of a psychosis the patient should seldom be treated further by the dermatologist but rather by the psychiatrist. Therefore, this group of dermatologic patients is of less concern to the nonpsychiatrist than is the group in which there is more somatic reaction to psychic influences; for example, in eczema and other neurodermatoses. In all these states the dermatologist is in need of greater neuropsychiatric diagnostic and therapeutic ability. This paper is one step in advancing our knowledge. Continued studies should produce evidence that certain dermatoses are constantly associated with certain specific personality traits of a neurotic nature. Possibly also certain sites are specifically related with the neurotic traits. Already there is some evidence for such an association in eczema, psoriasis and the seborrheic states. After hearing this paper, I am not sure of the author's views as to the specificity of the psychiatric relationship to single or multiple dermatologic indexes in their list. I will appreciate an expression of their opinion on this point, and also regarding the frequency with which the various dermatologic indexes occur in psychotic persons of the four groups which they have considered. Without some such figures, I hesitate to accept their statement that the psychoneurotic person is "less apt than the psychotic to have a cutaneous presenting symptom." The skin is a common site of reaction to normal and abnormal psychologic and emotional influences. Like Dr. Sulzberger, I would be pleased if we had more accurate measures with which to work. There are numerous reasons why we do not, but I am unlike him in that I am much more encouraged and hopeful for the future and believe that much yet will be learned in the field of investigations of personality.

DR. ADRIAN H. SCOLTEN, Portland, Maine: What shall be done about these dermatologic patients recognized as having some mild psychoneurosis and who are not getting needed spiritual help? The treatment will never be easy. It will take time to get the training which is needed to have a worth while understanding of the psychoneurotic person's problems which we meet in our dermatologic practice. The psychoneurotic person is a supersensitive, intelligent being who lives inefficiently. If we who wish to help him would put ourselves in his place and handle his problems as we would handle them if they were our own, we would then give to him the more balanced judgment which he needs. Statistics show that one third of all the patients who come to the dermatologists' office are psychoneurotic. Therefore, we should be treating their psychoneuroses as well as their dermatologic conditions. In our generation there will never be enough well trained psychiatrists to handle so many psychoneurotic persons. Most good psychiatrists believe that only a small percentage of those who have psychoneurosis need psychiatric or other profound treatment such as only a psychiatrist can give. They believe, as I do, that the old-fashioned family doctor practiced a good brand of psychiatry. He knew all about his patients; he knew how to handle the family's domestic and psychiatric problem, and he kept many of his patients from developing psychoneurosis and he also kept many of them out of the institutions for the insane. This type of technic is one which dermatologists can learn. Much could be learned in one-month courses given by the right men. The physician treating the psychoneurotic patient must be sincerely interested in his patient's welfare. The dermatologist who is as interested in his patient's family and other problems as was the old-fashioned family doctor will get some satisfying results. The priests, the ministers, the teachers and the friends of the patients are aids which every dermatologist can use to good advantage in his handling of dermatologic cases with psychiatric or psychogenic or emotional components. These persons, though not physicians, often give to psychoneurotic persons the certainties which they have lost. They preach to them the gospel

of acceptance and balanced living. They give them needed security and freedom from foolish fears. In the successful practice of dermatology, psychiatry and dermatology must travel hand in hand.

DR. MEYER BROWN, Chicago: As far as the questions that were raised by Dr. Lynch are concerned, I first would like to point out that in dermatology as well as in psychiatry there is difference of opinion as to classification of disease entities. Patients with psychoneuroses show dermatologic complaints less frequently than patients with schizophrenia or manic-depressive psychosis in my experience. As a matter of fact, the great majority of the dermatologic complaints that occur in psychoses never even come to the attention of the dermatologist, because the psychiatric state has become so obvious and severe that the dermatologic change becomes of secondary importance. A patient, for example, who believes that his wife is attempting to poison him by putting arsenic into his food is not likely to come to a dermatologist after he has been in an institution for a year or two, because he erroneously thinks the arsenic is finally producing some dermatologic symptoms. We had hoped merely to call your attention to the fact that dermatologic complaints are frequently the initial manifestations of a psychiatric state and that you owe it to yourselves as well as the patients to keep that in mind.

HOOKWORM INFECTIONS IN AMERICAN SERVICEMEN

With Reference to the Establishment of *Ancylostoma Duodenale* in the Southern United States

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One of the helminthologic features of World War II was the exposure of servicemen to infection with hookworm in areas infested with *Ancylostoma duodenale*, particularly in the Pacific islands. Reports of studies confirming this are gradually accumulating. The information available to date, together with certain emphases arising from a further examination of data secured by us on navy and marine personnel while on Guam, are brought together here to determine their relation to the question of the potential establishment of *A. duodenale* in the United States.

REVIEW OF PREVIOUS REPORTS

That *A. duodenale* was endemic in many of the Pacific islands, its amount increasing in relation to *Necator americanus* as the mainland of Asia was approached, has been recognized for many years. There may, however, be considerably more *A. duodenale* in some areas than hitherto has been realized. The rate of infection with *A. duodenale* in troops who have been engaged in combat and of course have been exposed to hookworm infection, as well as in natives in these areas, gives one index as to the endemic intensity of this species. Liebow and Hannum¹ reported only *A. duodenale* recovered after treatment from 10 ser-

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1. Liebow, A. A., and Hannum, C. A.: Eosinophilia, Ancylostomiasis and Strongyloidosis in the South Pacific Area, *Yale J. Biol. & Med.* 18: 381 (May) 1946.

vicemen who fought in the Solomons. Stoll² showed it to be the predominant hookworm species in natives of Guam, although the minor form in natives of Okinawa. He also found *A. duodenale* to an appreciable degree in marines returned from Leyte.

Australian soldiers who fought on the islands north of Australia were the first to be reported³ as having contracted hookworm infection in this area; about a third of those with hookworm infection harbored *Ancylostoma*.⁴ Sangster⁵ found that hookworm infection among "Australian army personnel increased steadily since the early days of the New Guinea campaign in 1942." In nine months at Port Moresby in 1943-1944 his cases were only *Necator* infections, while in Bougainville, January to June 1945, both *Ancylostoma* and *Necator* were contracted. One patient, in the latter group, was proved by post-treatment examinations to have been infected with approximately 3,500 hookworms.

Not all the reports on hookworm infections in American servicemen have disclosed the particular species present or the relation of incidence of infection to clearly defined exposure. Michael⁶ in a study of 1,000 patients who had returned recently from Pacific naval duty found only 3.8 per cent with hookworm, while in a group of 1,000 repatriated prisoners of war 15.9 per cent were infected. His use of sugar flotation for diagnosis, in place of salt, may account partly for these low figures. Markell,⁷ at a naval hospital in New Zealand, examined by zinc sulfate flotation the feces of 1,371 patients, mostly navy and marine personnel who had come from various parts of the South Pacific, and found 8.5 per cent to have hookworm infection, including men from Northern states. Zarrow and Rifkin⁸ over a two year period, in a general hospital in the South Pacific, examined by zinc sulfate flotation 3,415 soldier inpatients with service "up to three years in the various islands in the South Pacific area," and found 13.2 per cent with hookworm infection. They noted hookworm infections as frequent in soldiers from Northern states as from Southern states, but gave no data on this point.

The incidences of infection are higher with more clearly defined exposure. In a paper entitled "The influence of Combat on the Incidence of Intestinal Parasites," Russell, Eisenhower and Roose,⁹ at a Pacific base, reported the difference in incidence of hookworm infection in three groups of 100 men each as determined by zinc sulfate and brine flotation: A replacement group, which had just arrived from the continental United States, included 6 men with hookworm infection; a second group, stationed at an advanced base

but with no combat duty, had 4 with hookworm infection, and a third group, which had been subjected to combat conditions, had 25 with hookworm infection. At a base hospital in the South Pacific in August 1943, Allen¹⁰ found 28 of 71 men from the Solomon campaign to have hookworm infection, and Liebow and Hannum,¹¹ examining men in 1943-1944 on rest and retraining after service in Guadalcanal and New Georgia, encountered high eosinophil counts and about 25 per cent infected with hookworm. Recently, May,¹² at Bruns General Hospital, Santa Fe, reported that 35 per cent of 400 soldiers interned by the Japanese after the fall of Bataan were shown by zinc sulfate flotation to have hookworm infection. In only two of these studies, that of Liebow and Hannum¹ (on 10 men) and that of Zarrow and Rifkin⁸ (on 3 men), was the species of hookworm determined. These investigators found only *A. duodenale*, and did not find *Necator*. It seems doubtful to conclude, however, that all infections contracted in their areas were exclusively of this species.

Three other studies throw more light on the *Ancylostoma* index in American servicemen who had Pacific duty. Of 2,500 consecutive patients admitted from the Pacific area, examined by Most, Hayman and Wilson¹² at Moore General Hospital, Swannanoa, N. C., with several techniques including zinc sulfate and brine flotation, 11.5 per cent were found to have hookworms, whereas 6.2 per cent of 4,300 patients with service only in continental United States had hookworms. Most and colleagues stated that "the composition of both groups from the standpoint of residence in Southern hookworm states is sufficiently uniform so that this factor is not responsible for the difference observed." In a group of 169 men returned from the Pacific area and found to have hookworm infection, whose worms were recovered after treatment for the purpose of determining species, 100 had *A. duodenale*. If this ratio were extended to the 11.5 per cent incidence of hookworm infection in men who had had Pacific duty, then 6.8 per cent (or 1 in 15 men) brought back *Ancylostoma*.

In the survey made on Guam,¹³ it was found that 16.3 per cent of 1,983 men from eight military organizations had hookworm infection when examined by Lane's direct centrifugal flotation. Of these 1,241 were garrison force personnel who had never had combat duty and had not arrived on Guam until the island had been secured; the remaining 742 were marines from a heavy artillery battalion who had been brought from the Leyte campaign to Guam for rest and retraining. All were examined on a fair sample basis five to nine months after their arrival on Guam. Of the garrison force personnel, 5.7 per cent had hookworm infection; of the marines returned from Leyte, 34.1 per cent.

To carry the analysis further, data were obtained from the personnel records and the percentage of those infected correlated with three factors: age, period in service and home states. Taking the groups as a whole, in neither garrison force personnel nor marines returned from Leyte were there striking differences

2. Stoll, N. R.: *Necator Americanus* and *Ancylostoma Duodenale* in Guam, Leyte and Okinawa, with a Note on Hookworm Egg Sizes, *J. Parasitol.* 32: 490 (Oct.) 1946.

3. Lowe, T. E., and Lancaster, H. O.: *Hookworm Infestation*, M. J. Australia 1: 289 (April 1) 1944.

4. Bearup, A. J.: *Hookworm Infestations in Australian Soldiers*, *J. Parasitol.* 33: 170 (April) 1947.

5. Sangster, C. B.: *Hookworm Disease in Australian Soldiers*, with Reports of Cases, *M. J. Australia* 1: 385 (March 23) 1946.

6. Michael, P.: *Intestinal Parasitism: A Statistical Study on One Thousand Patients Recently Returned from Pacific Area Duty*, U. S. Nav. M. Bull. 46: 1589 (Oct.) 1946.

7. Markell, E. K.: *Intestinal Parasitic Infections in a Naval Hospital in New Zealand*, U. S. Nav. M. Bull. 44: 65 (Jan.) 1945. In a later report E. K. Markell, P. E. Mullinger and D. J. Schneider (Intestinal Parasitic Infections in Naval Personnel, *Am. J. Trop. Med.* 27: 63 [Jan.] 1947) at Treasure Island found 5.4 per cent of 1,153 men of the 12th Naval District personnel hookworm positive by zinc sulphate. Presumably these had not been out of the states.

8. Zarrow, M., and Rifkin, H.: *Intestinal Parasites Diagnosed at an Army General Hospital in the South Pacific*, *Am. J. M. Sc.* 212: 289 (Sept.) 1946.

9. Russell, H. K.; Eisenhower, E. W., and Roose, D. J.: *The Influence of Combat on the Incidence of Intestinal Parasites*, U. S. Nav. M. Bull. 46: 1716 (Nov.) 1946.

10. Allen, H. C.: *Eosinophilia in the South Pacific*, U. S. Nav. M. Bull. 42: 1241 (June) 1944.

11. May, E. L.: *Parasitologic Study of Four Hundred Soldiers Interned by the Japanese*, *Am. J. Trop. Med.* 27: 125 (March) 1947.

12. Most, H.; Hayman, J. M., Jr., and Wilson, T. B.: *Hookworm Infections in Troops Returning from the Pacific*, *Am. J. M. Sc.* 212: 347 (Sept.) 1946.

13. Stoll, N. R.; Loughlin, E. H.; Harris, A. H., and Chenoweth, B. M., Jr.: *A Study of Hookworm Infection in Navy and Marine Personnel on Guam*, *Am. J. Trop. Med.* 26: 687 (Sept.) 1946.

in the percentage infected with regard to age or period in service; however, there was a clear correlation with home states. Of garrison force personnel whose homes were in the Southern coastal states (Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi and Louisiana), 20.8 per cent were infected as contrasted to less than 5 per cent from other Southern states and less than 3 per cent from Northern and Western states. On the other hand, of the marines returned from Leyte, 48 per cent from the Southern coastal states, 38 per cent from other Southern states and 31 per cent from Northern and Western states were found to be infected with hookworm. It is of interest that these three percentages become 27, 33 and 29 when the respective geographic incidences of the garrison force personnel are subtracted, indicating that although the series was small, there was, regardless of home state, substantial similarity in the rate of contraction of infection on Leyte. This accords with expectation.

It was further shown by Stoll² that of those who were infected with hookworm and whose worm species were determined, about 3 in 8 of the Guam garrison force personnel had *Ancylostoma*, whereas 7 out of 8 of the marines harbored this form.

Rephrased not in terms of those found to be infected with hookworm but in terms of all examined, our figures showed *Ancylostoma* to be present in about 2 of each 100 men of the garrison force personnel and in 30 of each 100 marines who had participated in the Leyte operation. These figures are not at variance with the data of Most and co-workers,¹² at the Moore General Hospital, who found approximately 7 in 100 men returned from the Pacific, but not classified as to participation in combat, to have *Ancylostoma*. If it is assumed that the men consecutively admitted to Moore General Hospital from the Pacific were in the ratio of about 1 combat to 5 garrison force personnel, with exposures to hookworm similar to that of our two groups studied on Guam, then *Ancylostoma*-infected persons would appear in the ratio of about 7 in 100 men returned from the Pacific.

In addition to the Pacific theater, *A. duodenale* has been reported by Rogers and Dammin¹⁴ in American troops in Assam and Burma. They stated: "We have no reliable data on the actual incidence of hookworm infection among the troops who served in the forward areas, but it must have been considerable." Of 14 of their patients, the worms from whom were counted after treatment, *A. duodenale* was found in 12.

Summary of Reports.—From the studies reviewed it is apparent that hookworm infection was demonstrable to an appreciable degree in American servicemen who had Pacific duty,¹⁵ as was also the case in Australians.¹⁶ However, in evaluating the percentage of those who became infected in the Pacific, it is necessary to take into account that men who did not leave the continental United States or who had recently left and had not participated in combat showed some infections,¹⁷ especially those from the Southern coastal states.¹³ It was also shown anew that the species *A. duodenale* was present on islands of the South and West Pacific

area,¹⁸ and was demonstrable in Americans after service in the Pacific area.¹⁹ Finally, it is possible to express to a certain degree the extent to which *Ancylostoma* was a component of the hookworms acquired. Phrased in terms of 100 men examined on a fair sample basis after Pacific duty, *Ancylostoma* was present in 2 of 100 men of the garrison forces on Guam,²⁰ 7 of 100 with Pacific duty but with garrison and combat service not differentiated,¹² and 30 in 100 of the marines returned from Leyte.²⁰

In instances in which egg or worm counts were made, the hookworm infections were found to be usually light, although not exclusively so.²¹ Post-treatment worm counts of infected persons to determine species of hookworm present revealed in three reports the following numbers of *A. duodenale*: a total of 886 from 10 soldiers¹; from 1 to 112, averaging about 10, in 100 cases in an army hospital,¹² and from 1 to 107, averaging about 17, in 20 cases in navy and marine personnel.¹³ *A. duodenale* was also contracted by American troops in Assam and Burma.¹⁴

In any evaluation of intensity of infection with *A. duodenale* on the basis of worm counts, it should be remembered that this species lays two to four times as many eggs per day as does *N. americanus*.²²

ADDITIONAL CONSIDERATIONS BEARING ON POTENTIAL ESTABLISHMENT OF *A. DUODENALE* IN THE SOUTH

The implications of these data, showing that a component of *A. duodenale* was brought back to the states by one out of 15 men with Pacific duty, or approximately 7 per cent, are apparent when it is realized that most of the men who returned home from the Pacific never had a fecal diagnosis and consequently, if infected, were never treated.²³ Considering the fact that the majority of infections were nonsymptomatic, their recognition and treatment before discharge would have been a lucky accident. Although some difficulty was encountered in removing the last of the *Ancylostoma*, even by repeated treatment,²⁴ which our experience confirms, nevertheless treatment, when undertaken, reduced the number of worms and diminished the chance for the spread of infection.

From the point of view of our present interest, men returning with nonsymptomatic infections to homes in those states which have no hookworm problem can be forgotten, since unfavorable climatic conditions as well as other factors will cut off reinfections and the worms will eventually disappear. The statistically small chance that an occasional *Ancylostoma* carrier residing in the Northern or Western states will establish soil infections on some trip to the South can be dismissed for practical purposes.

Potentialities for establishing *Ancylostoma* in the South, particularly in the coastal states, lie with Southern exservicemen who returned to their homes from

14. Rogers, A. M., and Dammin, G. J.: Hookworm Infection in American Troops in Assam and Burma, *Am. J. M. Sc.* **211**: 531 (May) 1946.

15. Liebow and Hannum.¹ Markell,⁷ Zarrow and Rifkin,⁸ Russell, Eisenhower and Roose.⁹ Allen.¹⁰ May.¹¹ Most, Hayman and Wilson.¹² Stoll.¹³

16. Lowe and Lancaster.³ Bearup,⁴ Sangster.⁵ Markell,⁷ Zarrow and Rifkin.⁸ Russell, Eisenhower and Roose.⁹ Most, Hayman and Wilson.¹² Stoll, Loughlin, Harris and Chenoweth.¹³

18. Stoll.² Lowe and Lancaster.³ Bearup.⁴ Sangster.⁵

19. Liebow and Hannum.¹ Stoll.² Zarrow and Rifkin.⁸ Most, Hayman and Wilson.¹² Stoll, Loughlin, Harris and Chenoweth.¹³

20. Stoll.² Stoll, Loughlin, Harris and Chenoweth.¹³

21. Liebow and Hannum.¹ Stoll.² Lowe and Lancaster.³ Sangster.⁵ Most, Hayman and Wilson.¹² Stoll, Loughlin, Harris and Chenoweth.¹³

22. Soper, E. L.: The Relative Egg-Laying Function of *Necator americanus* and *Ancylostoma duodenale*, *Am. J. Hyg.* **7**: 542 (Sept.) 1927. Augustine, D. L.; Nazmi, M.; Helmy, M., and McGavran, E. G.: The Ova Parasite Ratio for *Ancylostoma duodenale* and *Ascaris lumbricoides*, *J. Parasitol.* **15**: 45 (Sept.) 1928.

23. McCoy, O. R.: Precautions by the Army to Prevent the Introduction of Tropical Diseases, *Am. J. Trop. Med.* **26**: 351 (May) 1946. McCoy stated: "An attempt to remove every single hookworm from troops returning to the United States is not considered practicable because of the difficulties of examining and treating such a large group of men and especially because repeated treatment may be necessary to effect complete cure."

24. Liebow and Hannum.¹ Lowe and Lancaster.³ Most, Hayman and Wilson.¹²

Pacific duty. What can be expected regarding their habits in relation to hookworm infection? It seems to us a clue to this appears in a reanalysis of our data on the examination of garrison force personnel on Guam. These 1,241 men, 98 per cent of them white, came from

that of the men worms from whom were counted after treatment two thirds had pure *Necator* infections, when the preponderant species on Guam was *Ancylostoma*.¹³

In table 1 the data on the examinations of the Guam garrison force personnel are shown simultaneously in

TABLE 1.—Results of Examination for Hookworm of Garrison Force Personnel on Guam, 1945 *

Home States	Period of Service	Age Groups						Total	
		18 to 19		20 to 29		30 and Over		Not Known	
		Number of Men with Hookworm Infection	Number of Men Examined	Number of Men with Hookworm Infection	Number of Men Examined	Number of Men with Hookworm Infection	Number of Men Examined	Number of Men with Hookworm Infection	Number of Men Examined
Southern coastal †.....	1st year.....	1	5	1	3	1	1	..	..
	2d year.....	3	19	9	30	1	11	..	..
	More than 2 years.....	1	1	16	73	2	31	2	4
	Total examined.....		25		106		43		4
	Per cent with hookworm	20		25		9		50	
Other Southern ‡.....	1st year.....	2	5	0	5	0	2	..	..
	2d year.....	1	23	4	45	1	25	0	2
	More than 2 years.....	0	5	5	115	2	90	0	4
	Total examined.....		33		165		117		6
	Per cent with hookworm	9		6		3		0	
Northern and Western §.....	1st year.....	0	5	0	19	0	2	..	..
	2d year.....	0	82	1	145	1	75	1	12
	More than 2 years.....	1	26	12	263	3	77	0	8
	Total examined.....		113		427		154		20
	Per cent with hookworm	1		3		3		5	
Foreign and unknown ||.....		0	2	0	6	0	5	0	15
									28

* Of the 1,241 men examined, 5.7 per cent had contracted hookworm infection; of a sample group of men with hookworm infection whose worms were collected after treatment to determine species, *A. duodenale* was present at the rate of 3 in 8 men with hookworm infection, or 2 per hundred of the 1,241 men.

† Southern coastal states: Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi and Louisiana. Average age of 178 men was 24.5 years.

‡ Other Southern states: Texas, Oklahoma, Arkansas, Missouri, Tennessee, Kentucky, West Virginia and Maryland. Average age of 321 men was 25.9 years.

§ Northern and Western states: Average age of 714 men was 24.2 years.

|| Foreign and unknown: Average age of 28 men was 29.1 years.

TABLE 2.—Results of Examination for Hookworm Made 1945, on Guam, of Marines Returned from Leyte *

Home States	Period of Service	Age Groups						Total	
		18 to 19		20 to 29		30 and Over		Examined	Per Cent Infected
		Number of Men with Hookworm Infection	Number of Men Examined	Number of Men with Hookworm Infection	Number of Men Examined	Number of Men with Hookworm Infection	Number of Men Examined		
Southern coastal †.....	2d year.....	7	9	11	26	1	2	37	51
	More than 2 years.....	..	..	22	47	0	1	48	46
	Total examined.....		9		73		3	85	
	Per cent with hookworm....	78		45		33			48.2
Other Southern ‡.....	2d year.....	8	26	20	44	3	8	78	40
	More than 2 years.....	1	1	15	44	0	1	46	35
	Total examined.....		27		88		9	124	
	Per cent with hookworm....	33		40		33			38.0
Northern and Western.....	2d year.....	36	102	53	151	7	27	280	34
	More than 2 years.....	2	14	61	208	3	14	236	28
	Total examined.....		116		359		41	516	
	Per cent with hookworm....	33		32		24			31.4

* Of 742 men examined, 34.1 per cent had hookworm infection; of a sample group of infected men, whose worms were collected after treatment to determine species, *A. duodenale* was present at the rate of 7 in 8 infected men, or 30 per hundred of 742 men.

† Southern coastal states: Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi and Louisiana.

‡ Other Southern states: Texas, Oklahoma, Arkansas, Missouri, Tennessee, Kentucky, West Virginia and Maryland.

The table includes the results covering 725 of the 742 marines examined and previously reported in less detail¹³; for 17 (including 3 infected men) data were incomplete as to home state, age or period in service. All these marines except 2 had been in service more than twelve months. The average age of all marines examined was 22.6 years.

five organizations which had been on Guam five to nine months, and showed an incidence of 5.7 per cent hookworm infection. It was concluded that these represented primarily hookworm infections contracted in the United States, as evidenced by their history, the heavier rate in men from Southern coastal states and the fact

relation to age groups and period in service of men for each group of states. In the men from Northern and Western states, who constituted over half the series, it will be noted that the hookworm infection rates were low, had little relation to age but increased with period in service, none in their first year being positive.

These infections were, without doubt, all contracted in service, perhaps some in Southern camps and, certainly, in view of the *Ancylostoma* component as noted elsewhere, some in the Pacific.²⁵ The situation with regard to men from Southern coastal states is the opposite. Even with the small numbers examined, there is infection present in their first year of service and there is a 25 per cent incidence in the 20 to 29 year age group. The data in table 1 on men from "other Southern States" show intermediate indexes.

The age incidences in men from Southern coastal states resemble those given by Keller, Leathers and Densen²⁶ in their over-all analysis of surveys of rural whites in six Southern states (North Carolina, South Carolina, Florida, Mississippi, Tennessee and Kentucky). Our data did not include information on rural and urban residence. It seems likely that if they had, the rates for men from rural areas would have been higher. If we subtract the rates of infection of men from the Northern and Western states, which represent infections not acquired in home states, from the rates for men from the Southern coastal states, the balance, 18.1 per cent, may be taken to represent infections acquired before entering the service.

This percentage of infection acquired before induction permits of two explanations: The data for the age groups 18 to 29 presented here indicates either that these hookworms were acquired in earlier life and persisted in significant numbers or that hookworms were being acquired shortly before induction into service. It seems to us that the former could account for no more than a fraction of the infections encountered in these surveys. Data are still fragmentary as to the length of life of undisturbed hookworm infections. In one study²⁷ of four experimental *Necator* infections showing initially 270 to 470 eggs per gram, two showed no drop in egg count after three and one-half years, but the other two were detectable only by flotation after one year and one and one-half years respectively. Of the 37 men with hookworm infection represented in the Southern coastal states (table 1), 31 were found on dilution count to average 1,650 eggs per gram (range 100 to 6,100). If we believe that the infections in this group of men included those acquired shortly before entering service, thus being due to a continuation through adolescence of faulty hygienic habits, it would then seem reasonable to suppose that those men from the Southern coastal states would persist in habits favorable to the establishment of *Ancylostoma* on returning home.

This same reasoning would apply to the *Ancylostoma*-infected marines from the Southern coastal states, and for comparison there is included table 2 showing the results of the examination of 725 of 742 marines returned from combat service in Leyte for whom information is complete as to home, state, age and period in service. Distribution of the infection in relation to the three factors is apparent, especially when the data are considered in comparison with table 1.

Although we have not touched on the bionomics of *A. duodenale* in relation to its gaining or maintaining a foothold in the Southern areas, the epidemiologic

implications are, nevertheless, clear. The observations of McCoy²³ are therefore worth bearing in mind:

Ancylostoma presents a greater public health problem than *Necator americanus*, the species now established in the southern United States, because it is more harmful to the host, is less amenable to treatment, and because its free-living stages are more resistant to climatic conditions.

SUMMARY AND CONCLUSIONS

We have presented epidemiologic data concerning the probable establishment of *A. duodenale* in the Southern United States. Of servicemen returning from the Pacific 1 in 15 has been reported infected with this species of hookworm. Also, analysis of hookworm infections carried by American servicemen from the South suggests the continuation into young adulthood (18 to 29 years) of faulty hygienic habits acquired in childhood. The presence in returnees of these ages of a measurable incidence of *A. duodenale* is thus combined with the evident persistence of practices favorable for dissemination of hookworms. The suspicion is thus increased that *A. duodenale* has an opportunity to appear in areas of current hookworm infection. Confirmation of such suspicion must await discovery of the first instance of proved autochthonous infection, probably in one of the Southern coastal states.

ABSTRACT OF DISCUSSION

DR. HAROLD B. WOOD, Harrisburg, Pa.: *Ancylostoma duodenale* has long been known to be in the Pacific islands, and for many years has occasionally been found in our Southern states. From Dr. Loughlin's statement we are led to believe that our servicemen contracted the *Necator* infestation in these islands. The *Necator* was discovered in our South and for many years was believed to be indigenous there. I should like to ask whether examinations were made of the natives on the islands when our medical service first arrived, to determine the danger of our troops' contracting the disease from the natives. I am sure that the International Health Board of the Rockefeller Foundation would appreciate a reprint of this paper by Drs. Loughlin and Stoll. An important result of a paper like this is to develop the attitude of surgeons toward these troops, particularly those who do not say where they have been.

DR. NORMAN R. STOLL, Princeton, N. J.: The interesting thing about the epidemiology which Dr. Loughlin has presented is that all that we can do, on the basis of present information, is to increase our suspicion as to the probable establishment of *Ancylostoma duodenale*. We speak of *Necator americanus* as our so-called American hookworm. Originally it was an African form, and it now extends in a broad belt throughout the equatorial regions. While the old world hookworm, *Ancylostoma*, overlaps the endemic *Necator* areas, it appears to do better where climate is somewhat more temperate. We have not dwelt on the biology of *Ancylostoma* in this epidemiologic report, but its consideration suggests that *Ancylostoma* may have a good chance as a species in our own Southern states. It is a form which is favored by environmental factors of the sort which we have there. A priori it should get along better than *Necator*, which has stood the South so well. These points should be kept in mind as we wait for the first report of the finding of autochthonous *Ancylostoma*. Also we should remember that *Ancylostoma* is considered a more damaging pathogen than *Necator* and less subject to satisfactory treatment. May I add that searching for *Ancylostoma* after treatment need not be considered such an unpleasant adventure as is sometimes thought. To post-treatment stools add a large volume of water or half-normal saline solution, allow several minutes for it to sediment, and cautiously discard the supernate. Continue such washing to secure a clean sediment. The worms, if present, may then be readily discovered by examination of the sediment in small amounts in shallow dishes, against a dark background. Screening the diluted specimen through a mesh of 60 to the inch or finer may be used to speed up the process.

25. Loughlin, E. H., and Stoll, N. R.: *Fomite-Borne Ancylostomiasis*, *Am. J. Hyg.* 45: 191 (March) 1947.

26. Keller, A. E.; Leathers, W. S., and Densen, P. M.: *The Results of Recent Studies of Hookworm in Eight Southern States*, *Am. J. Trop. Med.* 20: 493 (July) 1940.

27. Kendrick, J. F.: *The Length of Life and Rate of Loss of the Hookworms, Ancylostoma Duodenale and Necator Americanus*, *Am. J. Trop. Med.* 14: 363 (Sept.) 1934.

ANASTOMOSIS OF VAS DEFERENS AFTER PURPOSEFUL DIVISION FOR STERILITY

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Vasoligation, or surgical sterilization of the male, is done for various reasons: (a) with the idea of preventing the insane, the criminal or the perverse from producing offspring; (b) because the wife's health is said to be too precarious to risk bearing children, the wife being unable or refusing to undergo tubal ligation; (c) an agreement between husband and wife to prevent pregnancy; (d) to prevent the occurrence of epididymitis, a routine procedure in many clinics in the treatment of prostatism; (e) for the purpose of rejuvenation (Steinach), a false physiologic assumption and a clinical failure, and (f) mass sterilization for the purpose of racial limitation or extermination, as evidenced by recent Nazi treatment of persons of Jewish, Polish and other nationalities.

Because of the situation created in Europe by the mass sterilization procedures of bilateral vasoligation, or resection of the vas, this subject has recently been a matter of considerable discussion on the part of nonmedical persons.

Members of certain branches of the clergy have taken an active interest in this subject because of the marital implications resulting from this ordinarily uncommon premarital procedure. As far as I can determine, the general impression of all groups, lay, medical and religious, has been to the effect that not only is restitution of the normal lumen of the vas a difficult surgical procedure but also successful reanastomosis is so uncommonly attained as to make the procedure hardly worth undertaking. It is quite evident that many of these discussions have confused the procedure of anastomosis of epididymis and vas with reunion of the vas itself.

The person who seeks to have himself sterilized by vasoligation does so secretly and for what he considers strong personal reasons. The idea that ligation of the vas will be the solution of his problems is often conveyed to him by his family physician. The latter then refers him to a surgeon, usually a urologic one, for the operative procedure. The patient frequently encounters difficulty in persuading a competent surgeon to perform this procedure because in most states there is question as to its legality and the surgeon exposes himself to a possible suit for malpractice. Aside from the legal aspect there are often strong psychic, moral and religious reasons which the patient may have to overcome in order to justify the operation. It is natural, therefore, that in a private practice, in normal times, one would rarely encounter a person who sought restoration of fertility by another operation after having purposely submitted to vasectomy. For this reason no surgeon has individually had a large experience in attempting reunion of the vas after clean ligation.

A careful review of the literature reveals no observation of note on this subject. An occasional article describing a successful reunion of the vas was all that could be found. A serious review of this subject seems worth while at this time.

In 1919 I assisted Dr. William C. Quinby when he successfully reunited the left vas deferens in a patient who had purposely undergone bilateral vas resection in 1911. I have had the opportunity of verifying the success of this procedure by examining this man periodically for over twenty-five years.

Since 1920, I have performed reunion of the vas in 14 patients who had previously been sterilized by bilateral vas resection. Nine of these 14 men had a successful outcome as evidenced by a careful series of follow-up examinations over a period of two to fifteen years. The interval between resection and reunion of the vas was five to eighteen years, with an average of eight years. In every instance the epididymis, one or both sides, contained many motile spermatozoa. In all our patients bilateral reunion was done. The operation was not successful in 5 patients, 1 of whom was operated on twice in a period of three years. The cause of failure in these patients was not apparent to us.

An attempt to pool the knowledge of urologic surgeons on this subject was made by sending questionnaires to 1,240 recognized specialists. The following questions were asked:

1. How often have you attempted surgical reunion of the vas after its division for purposeful sterilization or when it had been ligated to prevent epididymitis?
2. In how many instances was the reunion successful as evidenced by the finding of spermatozoa in the semen?
3. Would you give a simple, brief description of the technic used?

Seven hundred and fifty urologists answered these questions; many of the replies were in detail and showed a considerable interest in this subject. The following tabulation will in brief summarize this information.

Questionnaires sent	1,240
Replies	750
Had never attempted the operation.....	615 surgeons
Operation performed one or more times by....	135 surgeons
Results Reported	
Number of operations performed.....	420
Operation a failure.....	239
Operation a success.....	160
Said to be a success but result really undetermined....	31

The 31 patients for whom the result is tabulated as undetermined were never examined after the operation but in each instance the wife was reported as having become pregnant.

No request was made for information on the incidence of proved spontaneous regeneration of the vasa after resection. However, 55 supposedly authentic instances were reported in the replies, and in each instance it was claimed that sections of the vasa were removed and examined microscopically at the time of operation. As one prominent urologist remarked, "I have noted several instances of proved spontaneous regeneration but have never attempted an operation to restore the lumen. If nature can do it so easily why can't we?"

TECHNIC

The operation for reunion of the vas should be made as simple as possible. I have followed the method used by Quinby, which consisted of freeing the embedded ends of the vas for a distance of 1 to 2 cm. and, after cutting away the occlusion scars at either end, performing an end to end anastomosis. In all our patients we performed incision or puncture of the epididymis (globus major) and verified the presence of active spermatozoa. In the first 6 patients on whom we

operated we tried to verify the patency of the lumen of the vas by passing a strand of silkworm gut to the region of the ejaculatory duct. The injection of methylene blue with recovery from the posterior urethra by catheter was done in 4 patients. Since operation was a failure in the fifth and sixth patients after this manipulation, we decided that the risk of trauma in this verification of patency of the lumen might defeat the purpose of the procedure. The last eight operations were done by end to end anastomosis, a strand of silkworm gut being used as a splint for a distance of 2.5 cm. above and below the juncture, the strand being brought out through the lower portion of the vas and through the scrotal incision. This splint was removed in six to ten days. In response to a request for a simple description of technic the following information was gained from the one hundred and thirty-five surgeons who had performed the operation:

End to end anastomosis.....	305
Side to side (lateral) anastomosis.....	29
Splint used (420 operations).....	299
Material:	
Silkworm gut or dermal.....	134
Horsehair.....	25
Tantalum wire }	
Stainless steel }	140
Silver wire }	

From the nature of the replies it was impossible numerically to correlate success or failure with the technic described. In five detailed reports the lateral anastomosis with a silkworm gut splint was successful.

Recent improvement in technic seems to depend on the satisfactory use of stainless steel or tantalum wire both as splinting material and for suture of the cut end of the vas. We have always used fine silver wire for this purpose. One of our urologists, Dr. Lewis Michelson, who has recently limited his work entirely to the treatment of male sterility, reported five successful procedures in 5 patients and was kind enough to detail the following technic:

Cut ends of the segments of vas were cleaned of scar tissue. Two stainless steel wires were introduced into the lumen on both proximal and distal segments for a distance of about 2 cm. The needle was pushed through the walls of both the distal and proximal segments of the vas, and they were then threaded on a cutting skin needle and passed through tunica and skin. Three anastomosing stainless steel wire sutures brought the cut ends of the vas together. Tunica, skin, etc. were closed with surgical gut. Both ends of the splinting wires were shotted. The wires were removed in seven to nine days. Anastomosing suture wires remained.

CONCLUSIONS

Reunion of the vas deferens after purposeful division to produce sterility, or to prevent epididymitis, may be successfully accomplished in from 35 to 40 per cent.

The possibility of success will naturally depend on the freedom of these tissues from previous inflammation.

Probably many of the reported failures were in patients with irreparable occlusion of the lumen of the vas at a point separate from the divided ends.

The normal testis continues to produce spermatozoa for an indefinite period after ligation of the vas. Renewal of the normal lumen permitted the normal escape of sperm eighteen years after surgical occlusion in 1 of our patients.

In view of this study the pessimistic outlook for relief of the vasectomized younger men in Europe should be revised and surgical aid offered to those persons who request it.

55 East Washington Street.

Special Article

CARCINOMA OF THE UTERUS, OVARY AND TUBE

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This article is the sixth of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment. When complete, the series will be published in book form by the W. B. Saunders Company under the sponsorship of the American Medical Association and the American Cancer Society.

The preparation of this article drew on an extensive experience covering twenty-seven years and the observation of well over 3,000 patients with cancer of the female generative organs. During the past fifteen years almost 2,500 patients have been processed through the Gynecology Tumor Conference under my direct supervision and with my participation. During the fifteen years of the Gynecology Tumor Conference work all patients seen have been carefully studied and evaluated, both before and after treatment. Furthermore, observation has continued throughout the years and my colleagues and I have maintained a 100 per cent follow-up on all patients seen. The fifteenth annual statistical report of this work is available for those interested in this type of cancer information. Except for a few tables which seem pertinent here the reader will not be burdened with statistical data.

While there is much that remains inscrutable regarding cancer the momentum of the fight against it is increasing. This is fortunate, for it is no second rate enemy. Evidence on this point is plentiful enough. Cancer now ranks second only to heart disease as a cause of death. There are now in the United States approximately 500,000 men, women and children with cancer, of which number about 170,000 will die this year. During the years of World War II the deaths due to cancer for the same period of time were approximately twice the number of American war casualties.

While much has already been accomplished toward the control of cancer it is essential that physicians realize how much more can be done with the tools now at their command. As the physician's experience with cancer increases he is apt to become pessimistic and too easily reconciled into accepting a high cancer mortality. This pessimism as well as the accompanying apathy are easily understood. Most cancers are in an advanced stage when first seen and their care does not give rise to optimism. The common habit of looking forward to a new cancer "cure" as the only solution to the problem serves as pap for this defeatist philosophy. It is easier to wait for a new cure, and this idea is nurtured by the present era of scientific "shenanigans." To assume that things are in a bad way and nothing much can be done about it until a new cure is available is faulty reasoning and the key to much of the present difficulty. All physicians confidently hope for a new cure, but if history repeats itself a new chemical or atomic cure will be of only limited value and its effectiveness will still be dependent

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on type of cancer and extent of involvement. A new therapeutic weapon will be most welcome, especially in the management of cancers not suitable for or responsive to either irradiation or surgery. But even though a new "cure" becomes available and proves to be as effective as surgery or irradiation—which would indeed be history making—physicians will, at most, find themselves at the beginning of another era such as occurred with the advent of surgery at the beginning of the present century and again fifteen to twenty years later with the arrival of clinically usable irradiation. In this day of far reaching discoveries and increasing scientific research the announcement of a new "cure" for cancer will not occasion great surprise but, unless its potentialities are considerably greater than either surgery or irradiation, the problem will remain as it is today, essentially one of prevention and early treatment. Unless this realistic point of view is adopted, anticipation of a new cure for cancer will minimize the value of existing weapons and encourage the adoption of a laissez faire attitude, both of which work against real progress in control of cancer. Actually there is plentiful reason to be hopeful. The increasing incidence of cancer is largely explainable on the basis of the fact that people live longer and therefore reach the cancer-susceptible age. Survival curves continue to show improvement. Most important, however, is the fact that physicians now have within their grasp the means to exert a powerful influence on many cancers, and especially cancer of the female genitalia.

Study and years of experience devoted to the problem of uterine cancer have convinced me that full realization and acceptance on the part of every practicing physician of the principles already mentioned and those to follow represents the most important single item in the control of uterine and many other cancers.

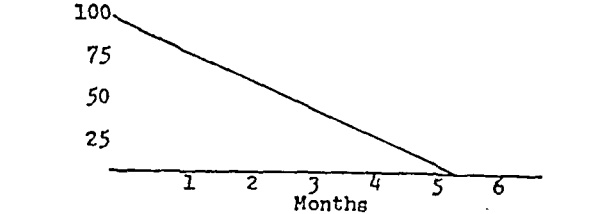
CANCER OF THE CERVIX

The uterine cervix is the commonest site for cancer of the female generative tract, constituting 65 per cent of all cancers of these organs.

The condition may exist quiescent in highly localized form for many years, but most cancers of the cervix are advanced when first seen. For this there are many reasons, chief among which are: (a) the undeveloped program of periodic health examinations and (b) delay

survival rate. Early cases permit attainment of a vastly greater five year survival rate (75 to 100 per cent).

Regular periodic examination of the cervix plus correction of minor lesions and biopsy for all suspicious lesions followed by prompt treatment in proved cases would reduce tremendously the mortality from this cause.



Showing approximate decrease per month (16 to 20 per cent) in chance for cure after onset of symptoms (spotting).

While the causation of cancer of the cervix is unknown much has been written concerning the possibility of a predisposing relationship between the common benign lesions of the cervix and cancer. Convincing evidence of such relationship is lacking, but even so the correction of all common cervical lesions is indicated on the grounds that cancer does not commonly appear in a healthy organ.

More than 90 per cent are of the epidermoid or squamous cell variety, most of the remainder being adenocarcinomas. In its earliest stages the cancer is most commonly found at the junction of the squamous epithelium of the vaginal face of the cervix and columnar epithelium of the cervical canal, from which point it spreads along or just beneath the surface until the entire vaginal cervix is involved. Further spread occurs by extension into the parametrial tissues, broad and sacrouterine ligaments, bladder and vaginal mucosa. Extension also takes place by way of the lymphatics to the regional lymph nodes, and it is the cancer cells in the parametrial tissues and involved lymph nodes that present the greatest obstacle to achieving a cure. Sterosis of the lower colon or rectum by the spreading neoplasm may become sufficiently marked to require colostomy. Pain due to osseous metastasis or encroachment on the spinal or sciatic nerves may require cordotomy for relief. Death may result from encroachment on and stenosis of the ureters. In some cases death is the result of terminal pneumonia caused by pulmonary metastasis and secondary pulmonary infection.

Symptoms of Cancer of the Cervix.—Early preinvasive lesions are commonly asymptomatic. When, however, invasion gets well under way, symptoms are usually present and become more pronounced with extension of the neoplasm. The principal and commonly the only symptom is spotting or bleeding. This may be slight at first and is characterized by being: (a) intermenstrual or irregular; (b) progressive, of increasing frequency and amount, and (c) prone to follow trauma, such as postcoital spotting.

Any woman presenting this symptom complex should be carefully examined, and a cervical or endometrial carcinoma should be suspected. About 15 per cent of patients with cancer of the cervix complain only of leukorrhea, a nonbloody watery, serous or purulent discharge. Some are symptom free, further emphasizing the need for periodic examination.

Diagnosis of Cancer of the Cervix.—While the advanced lesion presents little difficulty from a diagnostic point of view every case should be proved by

TABLE 1.—Waste of Time in Carcinoma of the Cervix

Reported by	Year	First Symptom to First Examination, Months	First Examination to Treatment, Months	Total Time Wasted, Months
Miller, N. F.: J. Iowa M. Soc. 23: 132-135, 1933	1929	6.2	6.0	12.2
Todd: J. Michigan M. Soc. 40: 191-196, 1941	1941	6.4	1.1	7.5
Miller, N. F., and Henderson, C. W.: Am. J. Obst. & Gynec. 52: 894-933, 1946	1946	5.0	4.5	9.5

on the part of patients in seeking medical advice after the onset of symptoms (table 1).

The significance of this waste of time is readily understandable by inspection of the chart based on spotting as the first symptom and positive evidence of parametrial thickening as the baseline for curability.

In spite of this delay the anatomic location and growth characteristics of the cancer are such that it is possible to achieve better than a 40 per cent five year absolute

taking tissue for histologic examination. In advanced cases this may require only removal of a piece of friable neoplastic tissue by means of a curet. In early and in questionable cases, tissue can be obtained for diagnostic purposes by means of any one of a number of readily obtainable biopsy forceps. Because these forceps do not remain sharp indefinitely and because the adjacent normal tissue encountered in early cases is tough, the imparting of a twisting motion to the biopsy forceps, once cervical tissue has been grasped between the jaws, will be found helpful. Since bleeding may follow biopsy it is well to have a small cautery, chemical coagulant or vaginal pack available for use. Serious bleeding at this time is seldom encountered. Biopsy taken by means of a scalpel is satisfactory but may lead to free bleeding and sometimes requires the placement of a stitch or two. In most instances biopsy of the cervix is an office procedure and requires no anesthesia.

When facilities are available for prompt evaluation the vaginal and cervical smear techniques now being enthusiastically received can be useful. Patients with positive smears should return for biopsy and histologic confirmation. One may look for considerable help in the future from the vaginal and cervical smear techniques as a means of screening for cervical and endometrial cancers. Taking the smear is simple enough; the interpretation, however, calls for skill in cytology. Perhaps, in time, pathologists generally will undertake such cytologic evaluation, making it possible for physicians to mail properly fixed slides to a qualified person for prompt evaluation.

Clinical Grouping and Histologic Grading of Cancer of the Cervix.—The clinical extent of the neoplastic growth is the most important single factor in determining prognosis. By classifying cancer of the cervix according to clinical extent one not only obtains a better idea of the patient's outlook but also facilitates intelligent discussion of the patient's condition. In evaluating placenta previa it makes considerable difference whether one is dealing with a marginal encroachment on, or complete covering of, the cervical os. So too, in working with cancer of the cervix, it is extremely helpful to know whether the lesion is early and confined to the cervix or advanced and associated with parametrial extension. A number of clinical classifications are used, their differences being of interest primarily to those who devote a good deal of their time to the problem of cancer of the cervix. For practical purposes there are four categories: 1. Clinical group I includes very early cases; early proved lesions, still confined to a small portion of the cervix. 2. Clinical group II includes more advanced cancers than in group I, but they are still confined to the cervix. Groups I and II are by all odds the most important. Cancers of the cervix in these stages present a favorable prognosis. With the adoption of a vigorous program of periodic check-up one may expect to see more patients in these stages and fewer in groups III and IV.

3. Clinical group III includes cancers of the cervix with questionable extension beyond the cervix, in which it is difficult to decide whether or not there is parametrial extension.

4. Clinical group IV includes all advanced cases, whether they reveal extension into vaginal vault, parametrial invasion or remote metastasis. While not hopeless they represent an advanced stage of the disease, one which is seen all too frequently today. This is a

large and inclusive group. It probably reflects: (a) unresponsiveness to educational programs, (b) the extreme need for universal periodic check-up examinations and (c) the quality of diagnostic facilities offered patients. As these things improve, as more and more women come regularly for check-up the number falling into group IV will decrease. Emphasis must be on the early lesion in the fight against cancer.

Evaluation of clinical extent requires care. It cannot be accomplished by vaginal examination alone but demands visualization of the cervix through a speculum and careful rectal palpation of the parametrial areas.

Histologic Grading: Histologic grading is largely the pathologist's responsibility. This may take the form of a frank statement to the effect that the neoplasm is of low grade malignancy or highly cancerous. The report may simply include a numerical rating such as I, II or III. In the latter case this numerical grading refers to degree of cell differentiation.

Thus, in histologic grade I the invading cells show considerable resemblance to the normal epithelium of the area involved. There is considerable differentiation. In grade III, the neoplastic cells are highly undifferentiated, having completely lost their resemblance to the normal cell type. Here is seen widespread infiltration of neoplastic cells with deep-staining nuclei of varying

TABLE 2.—*Surgical Rates for Carcinoma of the Cervix Based on Clinical Extent at Time of Treatment (University of Michigan)*

Clinical Group	5 Year		10 Year		15 Year	
	Number	Percentage Surviving	Number	Percentage Surviving	Number	Percentage Surviving
I	45	89	18	78	2	100
II	104	57	55	44	4	75
III	218	48	142	32	11	36
IV	669	36	317	12	14	0

sizes and numerous mitotic figures, reflecting a high degree of malignancy. Histologic grade II is an intermediate phase. There may still be seen in some areas a resemblance to the normal cell architecture, but this resemblance is only spotty or incomplete. The pathologist's report also indicates the type of malignant growth, such as the epidermoid or squamous cell and the glandular or adenocarcinoma.

In general, the clinical extent of the disease gives a more accurate index regarding ultimate prognosis and response to treatment than does the histologic grade of the neoplasm.

Prognosis for Cancer of the Cervix.—What can be said regarding chances for cure in cancer of the cervix? So much depends on the clinical stage of the disease when treatment is first instituted that it is best to discuss survival rates in relation to clinical grouping. When this is done evaluation of the patient's outlook becomes easier (table 2).

Table 2 represents data taken from the Fifteenth Annual Gynecological Tumor Conference Report¹ and indicates the average survival rate for a number of years for patients in the different clinical groups. The data shown in table 2 clearly demonstrate the importance of early diagnosis and treatment. Involvement of remote lymph nodes or early metastasis to other organs is uncommon; yet its occasional occurrence accounts for eventual death in some early cases in which treatment has been given.

1. Fifteenth Annual Gynecological Tumor Conference Report, 1931-1946, Univ. Hosp. Bull., Ann Arbor 13:82 (Aug.) 1947

Shall the Patient Be Told That She Has Cancer?—

There exists much difference of opinion regarding this point. Without entering on a lengthy discussion it may be stated that this practical question should not be answered dogmatically. In general, most women can be informed of the nature of their trouble in such a way as to make them fully aware, and yet the word cancer frequently can be avoided. It is my belief that patients who know the facts cooperate better. Furthermore, when the truth is known to both the patient and her family, the constant conniving and the many trying situations which arise for patient, family and physician can be avoided. While I definitely favor the patient's knowing what is wrong I do not believe it necessary or advisable to force the truth on those who have always avoided it and to whom mention of the word cancer is like sounding a death knell.

Treatment of Cancer of the Cervix.—Much has been written regarding the treatment of cancer; in fact, in the over-all picture, it may be said that the pen, by disseminating information, has been as mighty as the sword (scalpel). There are at present two acceptable methods of treatment for cancer of the cervix: (1) irradiation by means of high voltage roentgen rays and radium, and (2) radical surgical intervention.

I shall here attempt no more than brief mention of these methods, since I do not believe that the actual treatment of cancer of the cervix falls within the domain of the general physician. By surgical intervention I mean radical hysterectomy of the Wertheim type, bilateral salpingo-oophorectomy and pelvic lymphadenectomy. This is confined to selected cases and represents a revival of the one time mainstay in the management of cancer of the cervix. Sufficient evidence does not yet exist to indicate that such radical surgical treatment has more to offer the patient than does properly applied radiation. The point which I wish to make here is that if surgical treatment is to be used for cancer of the cervix it should be radical. The operation is not easy and unless properly performed may prove a missed opportunity for saving the patient's life. This, definitely, is not an operation for the untrained or inexperienced. What has been said for surgical treatment applies also to treatment by radiation. Few physicians have the facilities in the form of physical equipment or training for administering adequate high voltage roentgen ray or radium therapy. I do not consider the treatment of an occasional patient by inexperienced persons whose only knowledge of radioactivity is elementary either desirable or necessary. Undertreatment and occasionally overtreatment are the common result of such an arrangement. Undesirable sequelae are also more frequent. Good and permanent results require a proper understanding of both the disease and the weapons used to combat it. Opportunities exist for those especially interested in cancer work to receive the training and experience required for competence in this field. There are also tumor centers to which the patient may be referred for appropriate treatment. This becomes increasingly important as therapy grows more complicated and dangerous.

As previously stated, early diagnosis is the most important single factor in bringing about drastic reduction in both morbidity and mortality. Early diagnosis is to a large extent the domain of the general practitioner. It is here through periodic examination that he can achieve distinction for himself and accomplish the greatest good for his patients.

ENDOMETRIAL CARCINOMA

Cancer of the endometrium, less suitably called carcinoma of the "corpus" or "body," constitutes about 15 per cent of all cancers of the female generative tract. The disease occurs most frequently in postmenopausal women and is generally an adenocarcinoma. Clinical grouping is possible but not so satisfactory as for the cervix. This is generally based on size of the uterus, evidence of parametrial extension and uterine fixation. A small, freely movable uterus implies less extensive involvement and a more favorable prognosis than does the large uterus with fixation. The amount and histologic grade of the neoplasm are other important factors in determining prognosis.

Symptoms of Endometrial Carcinoma.—The commonest symptom in endometrial cancer is spotting or bleeding. This presents characteristics similar to those already listed for the cervix. About 25 per cent of patients with endometrial cancer have a semipurulent leukorrheal discharge as their principal complaint. Approximately 5 per cent have no symptoms, the disease being discovered incidentally or early, before sufficient involvement has taken place to produce symptoms. The appearance of spotting or irregular uterine bleeding is always suggestive. This is especially true in postmenopausal women revealing a healthy cervix.

Diagnosis of Endometrial Carcinoma.—Diagnosis is based on histologic confirmation of tissue obtained by curettage. The diagnosis may be suspected and even proved by careful cytologic examination of cervical smears. The decision as to whether such cells are or are not truly cancerous and whether they come from the cervical canal, endometrium, tube or ovary remains, for the present, a problem for the expert, subject to confirmation by biopsy (curettage) and routine histologic study. While curettage may at times be carried out as an office procedure in older parous women with a patulous cervix, hospitalization and thorough scraping of the uterine cavity with the patient under anesthesia is much more dependable. A positive report on tissue obtained by means of suction curettage is acceptable, but a negative report on tissue so obtained does not rule out the existence of an endometrial cancer. Slight bleeding following bimanual examination of the uterus is suggestive. When an endometrial cancer is present the trauma of bimanual examination is sometimes sufficient to disrupt the continuity of the neoplasm and result in slight bleeding. In the majority of cases the diagnosis is not difficult provided suggestive symptoms are watched for and the diagnostic procedures mentioned above are carried out.

Not all irregular spotting or bleeding in adult women is due to cancer, but in every instance cancer must be suspected until proved otherwise. Endocrinal imbalance is commonly noted at both ends of the menstrual span. In many menopausal women this is the cause of both the spotting complained of by the patient and the endometrial hyperplasia found associated with it. The widespread practice of administering estrogenic substances to both premenopausal and postmenopausal women for almost any and all symptoms has injected another cause for bleeding into the picture. The spotting or bleeding sometimes resulting from such medication can usually be distinguished from that of neoplastic origin in that the bleeding ceases and does not recur after use of the drug has been stopped.

While histologic examination of tissue obtained by diagnostic curettage is the proper method of arriving

at a positive diagnosis the procedure must not be abused. It is anticipated that physicians will exercise judgment in determining which patients shall be subjected to curettage. In the younger adult women spotting sometimes occurs at the time of ovulation. Here the history and absence of significant pelvic findings may be enough to warrant a probable diagnosis of ovulation bleeding and justify continued observation. A history of free use of the estrogens likewise indicates a period of observation after use of the drug has been stopped. If the bleeding is due to the estrogen it will soon cease and seldom recur. The presence of a small cervical polypus may give rise to spotting. Removal of the polypus should correct the situation unless cancer is also present. The bleeding associated with some uterine fibroids is commonly in the form of prolonged or increased menstruation. Endometrial cancer and uterine fibroids may coexist; hence in removing a uterus because of fibroids it is always well to open the specimen and grossly inspect the uterine cavity for evidence of a coexisting endometrial carcinoma. In the menopausal and premenopausal woman it is not so easy to be sure the bleeding is due to hormonal imbalance even though this appears to be the explanation. In all doubtful cases diagnostic curettage should be performed.

Treatment of Endometrial Carcinoma.—The advanced case of endometrial carcinoma permits no choice so far as treatment is concerned. If the patient is not excessively obese high voltage roentgen therapy in combination with a multiple capsule intrauterine application of radium is the principal standby. Patients have been cured by this method. The survival rate will naturally depend on the waste of time (table 3), the extent of neoplastic involvement and the quality of treatment.

High voltage and roentgen therapy or intracavitary radium therapy is also used in the management of early, more favorable cases, especially when the patient's general health or physical condition does not warrant a major operation. Most authorities in this field prefer to follow the radiation treatment by complete hysterectomy and bilateral salpingo-oophorectomy. The preoperative use of irradiation, either high voltage roentgen or multiple capsule intracavitary radium, followed in six to eight weeks by complete extirpation of the uterus and adnexa in properly selected cases, seems more logical and likely to contribute to greater permanence of cure. Histologic study of the previously irradiated removed uterus not infrequently reveals the presence of active neoplastic cell nests which, in time, could give rise to remote metastasis as well as local resurgence of the growth. Promptly recognized and properly treated endometrial or corpus carcinoma permits a good prognosis.

For reasons which have never been clear to me endometrial carcinoma has long been viewed by many physicians as a particularly benign type of cancer. This has not been borne out in fact. While a satisfactory survival curve may be demonstrated following full and adequate therapy this is not the case following incomplete treatment. Inadequate follow-up and the fact that the patient appeared to do well but died several years later are contributory factors in this connection. The practice of performing an incomplete hysterectomy for undiagnosed uterine bleeding is not a satisfactory way of preventing mortality from endometrial carcinoma. This practice leads to unnecessary operations and to inadequate treatment for the occasional case of endometrial cancer encountered. In my

opinion the patient is better treated when an effort is made to determine the cause of the bleeding and, if cancer is present, an acceptable program of irradiation is adopted, followed in six weeks by complete hysterectomy and removal of the appendages.

The purpose of the preoperative irradiation in these cases is to damage the neoplastic cells to the point where manipulative spread at the time of operation is unlikely. That this is accomplished by either roentgen rays or radium is proved by the necrosis and frequent obliteration of the endometrial lesion as revealed by careful histologic study following uterine extirpation. Destruction of neoplastic cells already in the parametrial tissues or in the pelvic lymph nodes is also a goal. The extent to which this is accomplished, however, is still an undetermined matter. Since cancer cells are sometimes found in the tubes and ovaries it is imperative that these organs be removed in all cases of proved endometrial carcinoma.

CARCINOMA OF THE OVARY

While the tumor-forming potentialities of ovarian tissue are considerable, ovarian carcinoma constitutes only 10 to 20 per cent of all cancers of the female reproductive organs. Though much less common than cancer of the cervix it presents a greater diagnostic and therapeutic problem. Like many internal cancers its onset

TABLE 3.—Waste of Time from Onset of First Symptom to Beginning of Treatment for Endometrial Carcinoma*

Reported by	Year	Time Wasted, Months
Miller, N. F.: J. Iowa M. Soc. 23: 132-175, 1933	1929	24.0
Collins, R. M.: J. Iowa M. Soc. 24: 71-75, 1934	1934	11.1
Miller, N. F.: Am. J. Obst. & Gynec. 40: 791-803, 1940	1940	12.7
Miller and Henderson*	1946	12.5

* Miller, N. F., and Henderson, C. W.: Am. J. Obst. & Gynec. 52: 894-933 (Dec.) 1946.

is silent, and early development generally occurs without accompanying symptoms. Because of this the neoplasm is commonly advanced before discovery.

There are many points about ovarian cancer of interest to the oncologist and pathologist which do not affect the general diagnosis and treatment of ovarian cancer, which I shall not inject into this discussion.

Ovarian cancer may occur in young women and children but is primarily a disease of older postmenopausal women, the average age being 52.

The degree of malignancy may range from the rapidly growing teratoma to the commoner, more slowly growing papillary cystadenocarcinoma. A variety of intermediate histologic types are seen. The cancer may be of primary origin or secondary, such as occurs with development in a preexisting serous or pseudomucinous cystadenoma. Metastatic cancer of the Krukenberg variety, which occurs secondarily to carcinoma of the gastrointestinal tract, represents another secondary variety. Consideration of the many histologic types of ovarian cancer is a comprehensive subject in itself and one which offers many problems. I shall not here become involved in this controversial aspect of the problem.

As stated earlier, while most incipient ovarian cancers are unaccompanied by symptoms, the functioning granulosa cell tumor by producing an excess of estrogenic hormone may cause uterine bleeding. The combination of ovarian tumor and uterine bleeding occurring in a preadolescent girl or a postmenopausal

especially suggestive of this type of neoplasm. Unfortunately, in the majority of patients with ovarian cancer abdominal enlargement, due to the tumor or an accompanying ascites commonly noted in advanced cases, is the first evidence suggesting the presence of an ovarian neoplasm. Loss of appetite, nausea, vomiting and cachexia due to encroachment on or involvement of the gastrointestinal tract are late manifestations. So, also, are pain and palpation of a flat abdominal mass, the so-called omental cake, caused by extensive neoplastic spread and omental involvement. The characteristic "silence" of early ovarian cancer is another reason why periodic physical examination is imperative in the control and prevention of pelvic cancer.

Diagnosis.—The diagnosis of ovarian cancer is made on the basis of histologic analysis of tumor tissue taken at the time of operation or, in advanced cases, on the basis of a biopsy of material from the posterior cul-de-sac or at the time of exploratory laparotomy. Diagnosis may also be confirmed by finding characteristic tumor cells in the ascitic fluid. In every case of ovarian enlargement, especially of the solid variety, the possibility of ovarian neoplasia must be kept in mind. During the menstrual years of the normal woman the ovaries may and frequently do undergo physiologic enlargement. Such tumescence seldom exceeds 5 cm. and commonly involutes or disappears within two to five months. Consequently cystic enlargements of this degree should be observed and their behavior noted. Progressive growth generally indicates a benign or malignant change and calls for surgical removal.

Management of Ovarian Cancer.—The management of ovarian neoplasia calls for clinical acumen. In general, complete surgical removal of both ovaries, tubes and the uterus is indicated in histologically diagnosed operable cases of ovarian cancer. However, since diagnosis is not possible until tissue has been obtained it is not always easy to carry out this pattern of treatment except where frozen section diagnosis is available during operation. The importance of cooperation between surgeon and pathologist in this connection is readily seen, especially in young women with a single ovarian neoplasm—freely movable but of questionable benignancy. Opportunity for frozen section diagnosis of tissue from the involved side and ruling out carcinoma will permit conservation of the normal ovary and uterus. Likewise, disclosure of a malignant neoplasm on the basis of histologic examination at the time of operation permits prompt and complete surgical extirpation, eliminating the necessity for a second laparotomy later. In the smaller hospitals where frozen section facilities and the services of a pathologist are not immediately available a conservative attitude toward the healthy-appearing ovary should be adopted. If the removed neoplasm proves to be cancer a second laparotomy for removal of the remaining ovary, uterus and tubes—though regrettable—is none the less indicated. There may be exceptions to this procedure when in a young woman the removed ovary reveals an extremely early lesion. Patients so treated in order to retain normal physiologic and child-bearing function must be closely observed, since ovarian malignant growths are not uncommonly a bilateral affair.

Preoperative or postoperative roentgen therapy may be desirable in all but the extremely early lesions in young women in whom a normal ovary was left. The value of such therapy has been demonstrated again and again. In some of the advanced cases of less

malignant growth the use of high voltage therapy (200 kilovolts or over) has occasionally resulted in sufficient improvement to make surgical extirpation possible. Indeed, in some instances the repeated use of high voltage roentgen therapy and surgery has permitted the prolongation of life for a decade or more.

We believe that every woman presenting the clinical picture of advanced ovarian carcinoma is entitled to exploration and biopsy, provided of course her physical condition permits. More than one person has been given a poor prognosis and short time to live on the strength of clinical evidence alone, and yet later exploration and histologic examination demonstrated a benign and operable neoplasm.

Prognosis.—While it is generally stated and borne out in fact that the prognosis for prolonged survival in ovarian cancer is not good, it must be remembered that histologic type of neoplasm and clinical stage of advancement at the time that treatment is instituted bear importantly on this situation. As pointed out earlier most patients do not report for diagnosis and treatment until the advanced state of the disease causes abdominal enlargement and discomfort. Obviously under such circumstances a good prognosis can scarcely be hoped for. The same may be said for the rare Krukenberg tumor, where ovarian involvement is secondary to a carcinomatous lesion of some portion of the gastrointestinal tract. Highly malignant teratomas, especially in young women, also offer a poor prognosis. The situation is not hopeless, however, provided that physicians recognize and strive to make their patients understand the extreme importance of, and vital need for, periodic pelvic examination. This is an absolute necessity for ovarian and other pelvic cancers, since prevention and early detection are the keys to the attainment of acceptable rates of survival.

CARCINOMA OF THE FALLOPIAN TUBE

Primary neoplastic involvement of the fallopian tube is exceedingly rare, constituting only 0.1 per cent of the cancers seen in the Gynecology Tumor Conference. Most primary tube cancers are of the papillary adenocarcinoma variety. During early growth the lesion is likely to be asymptomatic or silent in its development. Bimanual palpation of the pelvic viscera may, however, reveal a firm enlargement which cannot be accounted for on the basis of infection. The presence of an abnormal bloody vaginal discharge has been reported in some cases. Secondary carcinomatous involvement of the tube from a primary ovarian or uterine cancer may also occur.

Palpation of a firm or nodular movable tube may lead one to be suspicious, but it is unlikely that the diagnosis will be made without thorough investigation, as by cytologic study of a cervical smear, possibly visualization and biopsy through the cul-de-sac ("culdescopy") or at laparotomy. The treatment, if diagnosis is made in time, is preferably surgical extirpation of both tubes, ovaries and uterus. High voltage roentgen therapy might prove helpful as a postoperative procedure and as a life-prolonging measure in the inoperable case.

This discussion would be decidedly incomplete should I fail to emphasize what must now be clearly seen as the most important single factor in the control of pelvic cancer. While no one knows enough about cancer to permit dogmatic statements, long and careful study have clearly demonstrated one thing about which there can no longer be the slightest doubt, namely, the tremendous

value of prevention and early detection. It may be fantastic to hope that the day will come when every adult reports regularly for physical examination, but it is no idle dream to state that cancer of the pelvic organs (also cancer of the breast and skin) can be whipped through the general adoption of periodic physical examination. There is nothing new about this thought. It reflects the opinion and hope of most students of the cancer problem and it is time that real steps were taken to achieve this end. Why then has there been so much delay in the realization of regular periodic examination for all adult women? There are several reasons, only two of which will be considered here. The most important reasons lie with physicians. Many physicians are not familiar with the problem, and the comparatively few cases of cancer seen do not impress them with the prevalence of cancer or its importance as a cause of death. Neither do they recognize the vital part which they play in its control. Indeed, control of this disease lies predominantly in the realm of the general practitioner, not with the specialist. Many physicians are so busy that they cannot, and some for other reasons do not, encourage periodic examination. Many physicians hold that periodic examination imposes inconvenience and unnecessary expense on the patient and takes from the physician's limited time opportunity for the care of sick persons. There can be no denying that many physicians are pressed to the limit of their capacity, and doubtless many more physicians are needed to carry the medical load of this country. However, in attempting to keep people well and prevent cancer it is not asking too much to have the patient report every six months; yes, every six months for women over 40. Examination once a year is not enough, although it would make an acceptable beginning. The examination need not be expensive or excessively time consuming. Failure to advise periodic examination represents a dereliction of medical duty. Physicians also contribute toward delinquency of periodic examination by lacking the proper qualifications for making the examination. Healthy patients are frequently embarrassed and discouraged and commonly dissatisfied by the unresponsive attitude manifested by the physician. We no longer live in an age of blissful ignorance. The many channels today of propagandizing—both good and bad—have resulted in beginning public awareness concerning the advantages of preventive medicine. Therefore, it comes as a surprise to women trying to remain healthy to be told "Quit worrying. Go home and forget about it," or "Come back when you have symptoms." Surely women seeking to keep well are entitled to as much consideration on the part of the physician as are those who procrastinate to the point where early treatment is no longer possible. Physicians may not agree on some things concerning cancer but they do see eye to eye in the need to fight it. The taking of a careful history and periodic examination at regular intervals is the best means for carrying on the fight, and physicians, as the leaders in this fight, must not fail in their obligations or shirk their responsibilities. In this the general practitioner plays the key roll. By urging periodic examination for all patients and by making palpation of the pelvic viscera and visualization of the cervix, including biopsy when indicated, a routine part of every physical examination the death from cancer of many thousands of women can be prevented.

This is not the place to discuss the technic of pelvic examination except to say that its proper performance

can and should be learned by every physician. In emphasizing prevention I do not mean to imply that all women with abnormalities of the cervix or other pelvic organs require hospitalization and operation. Most common cervical lesions can be rectified without hospitalization by use of the cautery or other local treatment. Doubtful or suspicious lesions should be biopsied. Since only the physician can see the cervix, women must rely on him to correct conditions for which they would demand treatment were the cervix located on a visible portion of the body, such as the face.

The problem before physicians is not unsurmountable, but it is big and important enough to challenge the best fighting spirit of the medical profession.

Clinical Notes, Suggestions and New Instruments

CRANIAL ARTERITIS

Report of Its Occurrence in a Young Woman

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and

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The clinical syndrome of cranial arteritis has been described as "a rare, febrile, self-limited disease of variable duration and unknown etiology."¹ It has been observed to occur in both sexes, only in persons over the age of 50 years, and the local manifestations are usually associated with systemic symptoms and signs such as fever, malaise, lassitude, sweating and weakness. A mild leukocytosis is often seen.

Horton, Magath and Brown² first described the clinical entity of temporal arteritis in 1932, and recently Dantes³ stated that 36 patients with this disease had been reported in the literature.

Some observers⁴ have expressed the belief that the arteritis of the temporal artery may be part of a generalized process and that the clinical involvement of that artery is merely a local manifestation of an underlying widespread process.

In many of the patients ocular disturbances are present, and these range from retrobulbar pain to complete loss of vision.⁵ This difficulty has been ascribed to involvement of the retinal arteries by the same pathologic process seen in biopsies of the temporal artery.

The case herein reported is of clinical interest because of the age of occurrence of the disease and because the systemic manifestations were so mild. Another unusual feature in this patient is the fact that she experienced complete symptomatic relief immediately following removal of the involved segment of the left temporal artery and has remained well for the follow-up period of one year.

REPORT OF CASE

J. F., a white married housewife aged 22, was admitted to the New York Post-Graduate Hospital in December 1945 with the chief complaint of left-sided temporal headaches of three months' duration. Although the patient had experienced mild intermittent left-sided headaches for a period of one year, in

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2. Horton, B. T., Magath, T. B., and Brown, G. E.: An Undescribed Form of Arteritis of the Temporal Vessels, *Proc. Staff Meet., Mayo Clin.* 7: 700-701 (Dec. 7) 1932.

3. Dantes, A. D.: Temporal Arteritis, *J. A. M. A.* 131: 1265-1269 (Aug. 17) 1946.

4. Chasnoff, J., and Vorzimer, J. J.: Temporal Arteritis: Local Manifestation of Systemic Disease, *Ann. Int. Med.* 20: 327-333 (Feb.) 1944.

5. Sproul, E. E.: A Case of Temporal Arteritis, abstracted, *New York State J. Med.* 42: 345-346 (Feb. 15) 1942.

5. Shannon, E. W., and Solomon, J.: Bilateral Temporal Arteritis with Complete Loss of Vision, *J. A. M. A.* 127: 647-649 (March 17) 1945

September 1945 the pain became sharply localized to the left temporal region and was associated with a deep-seated retrobulbar discomfort. The patient felt a throbbing sensation and tenderness in the temporal region. In addition there were mild general symptoms of chilliness, fever, malaise and weakness. Physical examination at that time revealed no abnormality



Fig. 1.—Photograph showing the swollen inflamed segment of the anterior branch of the left temporal artery. The involved area extended 3 cm. beyond the hair line.

except in the left temporal area, where the temporal artery above the eyebrow was thickened, beaded and tender and showed a feeble pulsation. The skin overlying it was reddened. The length of the entire involvement of the artery was 4 cm. (fig. 1). The general symptoms cleared in a few days, while the local manifestations persisted for three weeks. During the next two months the patient was troubled only by mild intermittent left-sided temporal headaches. Ophthalmologic examination by Dr. Rudolf Aebli at this time disclosed no abnormality. Three weeks before admission to the hospital the local symptoms and signs recurred with great intensity but without any of the constitutional symptoms. Examination on admission showed the left temporal artery to be thickened, beaded and tender and a faint pulsation was palpable. The skin overlying the artery was not reddened at this time. The other arteries of the scalp and extremities appeared normal on examination. The temperature, white blood cell count, sedimentation rate and urine were normal.

On December 22, with the patient under local anesthesia, the entire involved segment of the left temporal artery was removed. It was interesting to note that immediately after the operation the patient's headache and retrobulbar discomfort subsided.

Dr. A. E. Margulis, of the department of pathology, examined the specimen and made the following observations:

Gross Observations.—The specimen is a segment of artery 33 mm. long and 3 mm. in diameter. The lumen shows some variation in caliber and is generally small, but is free of thrombus. The wall of the vessel seems slightly thickened but is still pliable, and around the vessel there is a cuff of fibromuscular connective tissue.

Microscopic Observations.—This artery was cut serially from end to end and studied in hematoxylin-eosin, trichrome, van Gieson's elastica stain and Gram stain. The vessel shows both periarteritis and arteritis. The most striking change is the periarteritis. This appears as an eccentric cap in the perivascular tissues, surrounding one third to one half the perimeter of the vessel, and invades the surrounding fibrous and muscle tissue. The lesion extends for a considerable distance in the long axis of the artery and probably accounts for the nodularity before excision. This periarterial inflammation is an area of granulation tissue, numerous small calibered thin-walled and thick-walled vessels in an area of delicate fibrosis, infiltrated by lymphoid and plasma cells, the lymphoid cells sometimes forming follicles with germinal centers. There is also an occasional eosinophil. There are areas of hemorrhage and a few clumps of hemosiderin pigment. No giant cells are seen. The changes in the vessels involve all coats, and are proliferative and fibroblastic rather than exudative. The intima is much thickened in irregular fashion so that the luminal surface is scalloped; the lumen is much reduced in caliber but nowhere obliterated or filled with thrombus. The thickening of the intima is by a generally loose, finely fibrillar connective tissue in which there are found occasional groups of smooth muscle cells. The luminal surface is covered by an intact layer of slightly swollen endothelial cells. The internal elastica shows focal changes. There are areas of degeneration where it stains poorly and is finely crenated and areas where it is completely absent, at the margins of such areas shadows of elastic fibers being noted. The muscular coat shows principally focal atrophy, areas of partial disappearance of the muscle fibers and separation of the remaining muscle fibers by a finely fibrillar fibrosis. No



Fig. 2.—Photomicrograph enlarged approximately thirty-eight times, showing cross section of resected temporal artery. The most pronounced inflammatory changes are in the perivascular region. A detailed description is given in the text.

giant cells are noted in any coats of the vessels. Bacteria are not demonstrated either in the wall of the vessel or in the perivascular inflammation.

Diagnosis.—There is periarteritis and arteritis of a segment of the temporal artery.

Note.—The changes described do not conform to the histologic changes reputed to occur in the syndrome of temporal arteritis. More specifically there is not the exudative giant cell arteritis which has been found in the active phases of this recently described syndrome. It must be emphasized however that not all the biopsies or autopsies performed in this disease have shown such a giant cell arteritis. Only relatively few histologic studies of the clinical syndrome of temporal arteritis have been made, and it is doubtful that the complete life cycle of this lesion has been delineated. Clinically it is known that the lesion regresses and that the artery apparently returns to normal, but not much is known about the histologic structure of the healing or late stages (fig. 2).

Follow-Up.—The patient has been seen at frequent intervals during the past twelve months and has remained entirely free from headaches and retrobulbar pain. The operative site has remained well healed and the proximal normal left temporal artery is compressible and nontender and pulsates normally.

Comment.—This patient had typical physical manifestations of cranial arteritis. Microscopically, however, the picture is at variance with the classical pathologic findings in that no giant cells were seen and there was no evidence of a thrombus. It is worthy of note that our patient showed less evidence of inflammation locally in the region of the temporal artery at the time of operation than at the onset three months before. Therefore it is conceivable that the microscopic specimen examined represents a late stage in the life cycle of this disease not reported previously.

This is the first patient to our knowledge who has manifested the symptoms of the syndrome, cranial arteritis, at such an early age.

SUMMARY

A case of cranial arteritis occurring in a 22 year old white woman is reported and represents the first instance in which this condition has been observed under the age of 50 years. After removal of the diseased segment of the temporal artery the patient has remained free of symptoms for one year.

502 Park Avenue—55 East Ninety-Second Street.

DICUMAROL POISONING

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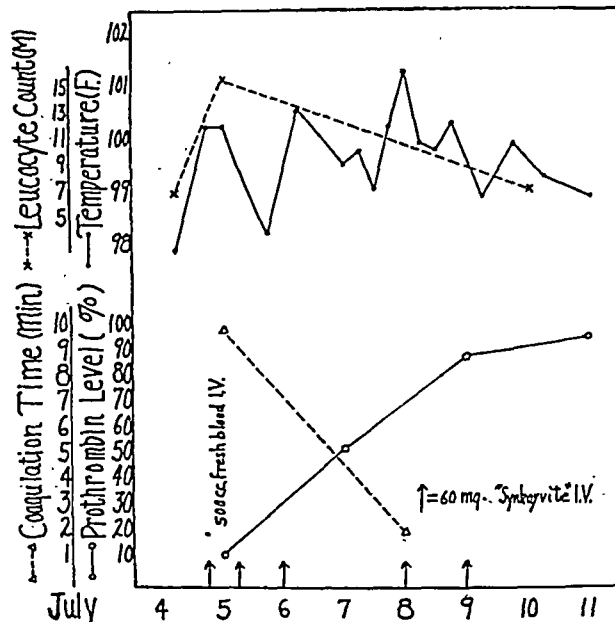
Those experienced in the clinical use of "dicumarol" have repeatedly emphasized its dangerous possibilities,¹ and yet instances of intoxication due to inadequately controlled dosage continue to be reported.² The case to be presented is one of self medication with dicumarol which resulted in widespread hemorrhages of serious import.

REPORT OF A CASE

Miss V. H., a 46 year old graduate nurse, entered Charlotte Memorial Hospital July 4, 1947, complaining of pain across the middle of the back, tightness in the upper part of the abdomen and the passage of bloody urine for two days. On the first day of illness she awoke with severe aching across the lower dorsal region bilaterally, somewhat relieved by three acetylsalicylic acid tablets, a heating pad and bed rest. That night she passed notably dark urine. Next day, dosage with magnesia magma followed by two enemas produced several soft, grossly bloody stools; grossly bloody urine was voided on two more

occasions. Backache continued, and the patient noted for the first time large bruises over the trunk, buttocks, forearms, thighs and face. A soft clot in the right upper gum had oozed most of the day.

Close questioning with regard to drug habits elicited at first only the usual reply of acetylsalicylic acid and various pro-



Note the steady response of the prothrombin level to intravenous administration of vitamin K and the accompanying prompt drop in coagulation time.

prietary headache remedies; at length, however, the patient volunteered that she had taken "eight or ten tablets" of dicumarol for "arthritis," a procedure said to have been suggested by a newspaper article. Originally she said that she had taken them "last week," but this statement was amended to "three weeks ago." The exact dosage and duration of self medication with dicumarol remain in doubt.

Past history and systemic review disclosed no evidence of hepatic or renal disease, and there had never before been any bleeding tendency. "Migraine headache" had occurred for many years, but not for the past seven. Fleeting pains throughout the limbs and trunk when the patient arose in the mornings led to the diagnosis of arthritis. No joint swelling, redness, heat or limitation of motion had ever been observed.

Physical examination revealed a slightly obese, somewhat pale white woman of middle age who showed no signs of shock. The blood pressure was 118 systolic and 70 diastolic; the pulse rate was 90. Over the skin of the forearms and thighs were scattered deep purple ecchymoses some 2 cm. in diameter. Similar lesions were apparent in both flanks where the girdle was tightest. In the left buttock was a large ecchymotic area some 10 cm. wide, the site of a liver injection given two days before. Scattered petechiae were easily seen over the chest, forearms and calves and in the mucous membrane of the mouth. The conjunctivae and fundi were clear. Except for slight tenderness on deep palpation of the right upper quadrant there were no other significant findings.

Emergency laboratory studies showed a hemoglobin level of 10.5 Gm. (72 per cent) and a leukocyte count of 7,200. A tourniquet applied between systolic and diastolic blood pressure for five minutes to the upper part of the arm produced 20 to 25 petechiae in the antecubital space. More complete studies next day gave the following results: red blood cells, 3,740,000; white blood cells, 15,800; hemoglobin, 10.0 Gm. (70 per cent); platelet count, 289,440; bleeding time five minutes and thirty seconds; coagulation time (capillary tube method) ten minutes plus (the procedure was discontinued after ten minutes), and the prothrombin level was 1. per cent. A fragility test showed

1. (a) Barker, N. W.; Cromer, H. E.; Hurn, M., and Waugh, J. M.: Use of Dicumarol in Prevention of Postoperative Thrombosis and Embolism with Special Reference to Dosage and Safe Administration, *Surgery* 17: 207-217 (Feb.) 1945. (b) Barker, N. W.: Clinical Use of Dicumarol, *M. Clin. North America* 29: 929-935 (July) 1945. (c) Allen, E. V.: The Clinical Use of Anticoagulants, *J. A. M. A.* 134: 323-329 (May 24) 1947. (d) Levan, J. B.: Dicumarol Therapy, *Ann. Int. Med.* 23: 941-950 (Dec.) 1946.

2. (a) Shlevin, E. L., and Lederer, M.: Uncontrollable Hemorrhage After Dicumarol Therapy with Autopsy Findings, *Ann. Int. Med.* 21: 332-342 (Aug.) 1944. (b) Hendrick, J. W.: in discussion on Allen, A. W.; Linton, R. R., and Donaldson, G. A.: Venous Thrombosis and Pulmonary Embolism, *J. A. M. A.* 133: 1276 (April 26) 1947.

beginning hemolysis at 0.40 cc. of 1 per cent sodium chloride, ending at 0.20, against a control of 0.44 and 0.28 respectively. The urine was dark red and loaded with red blood cells on microscopic examination.

On July 5, the day following admission, the patient received 30 mg. of "synkayvite" (a preparation of vitamin K) intramuscularly in divided doses, 60 mg. of "synkayvite" intravenously twice six hours apart, and a transfusion of 500 cc. of fresh citrated whole blood. Next day 60 mg. of "synkayvite" was given intravenously, a dosage repeated on the fifth and sixth hospital days. By the third day the patient showed much subjective improvement. Her backache and abdominal discomfort had disappeared, and she was eating and sleeping well. The urine remained bloody for two days, dark for two more days, but was entirely clear thereafter. A stool specimen secured by enema on the fifth hospital day gave a 2 plus benzidine reaction. The temperature beginning the day following admission rose daily to 100.4 to 101.4 F., but returned to normal levels by the eighth day. The prothrombin level rose successively to 55 per cent on the fourth day, 50 per cent on the sixth day and 98 per cent on the eighth day. The coagulation time fell by the fifth day to two minutes six seconds, and the bleeding time to one minute fifteen seconds. Blood counts had been restored to normal; on the seventh day the red cell count was 4,500,000, with a hemoglobin level of 12.6 Gm. and a white cell count of 7,250. Since the patient had become asymptomatic and observed deviations of the clotting mechanism had been restored to normal, she was discharged on the eighth hospital day.

COMMENT

In view of the pronounced depression of the prothrombin level with associated elevation of coagulation time, both of which responded in striking fashion to the administration of vitamin K and fresh whole blood transfusion, there can be little doubt of the diagnosis of dicumarol intoxication. The history of dicumarol medication is definite, even though the exact quantity taken and period of administration remain obscure. The fever, I feel, can be accounted for by extensive bleeding into the tissues such as occurs in thrombopenic purpura; similar observations have been recorded by Shlevin^{2a} and Wright.³ The slight prolongation of bleeding time is interesting in view of reports by other authors showing no deviation of this test from normal.⁴

Dicumarol toxicity, established by the brilliant investigations of Link and his co-workers into the cause of hemorrhagic disease of cattle,⁵ led to its use as an anticoagulant in certain thrombotic disorders of man.⁶ When controlled by frequent accurate estimations of the prothrombin level, however, toxic reactions can be kept at a minimum. E. V. Allen reported "major bleeding" in only 1.9 per cent of 1,686 postoperative cases.^{1c} Such bleeding, according to Barker,^{1b} is almost always from surgical wounds, especially in gynecologic procedures. Definite bleeding, as Barker stated elsewhere,^{1c} is rare if the prothrombin level does not fall below 10 per cent of normal and even then occurs in only 4 per cent of such cases; multiple widespread ecchymoses and hemorrhages, he continued, are extremely rare. No frank hemorrhages occurred in the 50 cases reported by Peters,^{6b} nor were hemorrhagic phenomena observed in the 162 patients given dicumarol by A. W. Allen.⁷ Because identical amounts of the drug may produce widely different effects on the prothrombin level in different persons, or at different times in the same, accurate daily checks on the prothrombin level must be made.^{1c} Cromer found that 27 per cent of 93 patients showed a rise in prothrombin time to over sixty

seconds after one or two doses, a rise sustained, in many cases, for several days.⁸ Four of 60 patients treated by Levan showed gross hematuria on ordinary dosage.^{1d} Fatalities directly attributable to hemorrhage induced by dicumarol have not occurred in well followed cases. The two deaths described by E. V. Allen,^{1c} 2 by A. W. Allen,⁷ and 1 by Butsch and Stewart⁹ all were observed after major operation or in the presence of malignant growths, where the fatal hemorrhage could have occurred in the absence of dicumarol. Therefore, while major bleeding might rarely take place in closely followed cases under dicumarol therapy, untoward reactions are almost always avoidable.

Such is not the case when dicumarol has been administered without a constant check of the prothrombin level. Shlevin and Lederer^{2a} have reported a fatality in a patient who had, before coming under the care, received 2,100 mg. of dicumarol without one such check. Engorgement of all blood vessels except the larger trunks was seen at necropsy, and hemorrhages had occurred in the renal pelves, bladder and brain. Massive hematuria following operation has been observed in several cases by Hendrick.^{2b}

The therapy of frank hemorrhage due to dicumarol intoxication is now simple and satisfactory. As Crom and Barker have shown,⁸ the prothrombin level responds rapidly to massive intravenous doses of vitamin K; 64 mg. of menadione brought the level to safe limits in 35 of 37 patients within eighteen hours. Allen^{1c} now recommends 30 to 60 mg. of vitamin K intravenously; Levan, 60 mg.,^{1d} the frequency of administration depending on the prothrombin level. Fresh blood transfusion, though it does not give a sustained decrease in prothrombin time, forms a valuable adjuvant,^{1b} especially when appreciable loss of blood has occurred.

CONCLUSIONS

A case showing hemorrhagic diathesis due to accidental poisoning with self-administered "dicumarol" is reported. The prevention and treatment of dicumarol intoxication are briefly discussed. The laity, as well as physicians, should be warned against indiscriminate use of a potentially dangerous drug, and popularizers of medical discovery should exert the utmost discretion in their articles concerning dicumarol.

NOCARDIOSIS

Nocardia Asteroides Infection Simulating Pulmonary Tuberculosis

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A review of the literature reveals that infection due to *Nocardia asteroides* (formerly called "Actinomyces asteroides") is not common. In the large majority of cases reported, the diagnosis has been made at the time of necropsy. In those instances in which the diagnosis was established during life, the organism usually was demonstrated late in the course of the disease. Only an occasional recovery has been reported. Before the introduction of sulfonamide drugs and antibiotics no satisfactory treatment was available. In 1921, Henrici and Gardner² reviewed the literature on the acid-fast actinomycetes.

3. Wright, I. S., and Prandoni, A.: The Dicoumarin 3-3'-Methylenebis (4-Hydroxycoumarin), J. A. M. A. **120**: 1015-1021 (Nov. 28) 1942.
4. Butt, H. R.; Allen, E. V., and Bollman, J. L.: A Preparation from Spoiled Clover Which Prolongs Coagulations and Prothrombin Time of the Blood, Proc. Staff Meet., Mayo Clin. **16**: 388-395 (June 18) 1941.
5. Davidson, C. S., and MacDonald, H.: A Critical Study of the Action of 3-3'-Methylenebis (4-Hydroxycoumarin), Am.J.M.Sc. **205**: 24-33 (Jan.) 1943.

5. Link, K. P.: The Anticoagulant from Spoiled Sweet Clover Hay, in Harvey Lectures (1943-1944), Lancaster, Pa., Science Press Printing Company, 1944, vol. 39, pp. 162-216; cited by Allen.^{1c}
6. (a) Footnotes 1 and 3. (b) Peters, H. R.; Guther, J. R., and Branble, C. E.: Dicumarol in Acute Coronary Thrombosis, J. A. M. A. **130**: 398-403 (Feb. 16) 1946.
7. Allen, A. W.; Linton, R. R., and Donaldson, G. A.: Venous Thrombosis and Pulmonary Embolism, J. A. M. A. **133**: 1268-1274 (April 26) 1947.

8. Cromer, H. E., Jr., and Barker, N. W.: The Effect of Large Doses of Menadione Disulfite (Synthetic Vitamin K) on Excessive Hypoprothrombinemia Induced by Dicumarol, Proc. Staff Meet., Mayo Clin. **19**: 217-223 (May 3) 1944.

9. Butsch, W. L., and Stewart, J. D.: Clinical Experiences with Dicoumarin, J. A. M. A. **120**: 1025-1026 (Nov. 28) 1942.

Fellow in Surgery, Mayo Foundation (Dr. Glover), and from the Division of Medicine, Mayo Clinic (Dr. Herrell), the Section on Bacteriology, Mayo Clinic (Dr. Heilman), and the Mineral Springs Sanatorium (Dr. Pfuetze).

1. Waksman, S. A., and Henrici, A. T.: The Nomenclature and Classification of the Actinomycetes, J. Bact. **46**: 337-341 (Oct.) 1943.

2. Henrici, A. T., and Gardner, E. L.: The Acidfast Actinomycetes, with a Report of a Case from Which a New Species was Isolated, J. Infect. Dis. **28**: 232-248, 1921.

They were able to find 26 such cases and they added 1 case, in which the patient was suffering with what appeared to be a pulmonary infection. The organism isolated from the sputum was an acid-fast actinomycete which they described under the name of *Actinomyces gypsoidei*. Later Henrici³ expressed the opinion that this organism had no characteristics by which it could be differentiated from *Actinomyces asteroides*. Of the group of 26 cases which Henrici and Gardner collected from the literature, the only case in which recovery was reported was an example of Madura foot. Recovery followed amputation of the infected foot. In the case reported by Henrici and Gardner, the patient was treated with antigen made from the cultures but the final outcome in this case is uncertain.

Goldsworthy⁴ added another case to the literature in 1937; this infection also was fatal. Another case of fatal outcome was reported by Kessel and Goolden⁵ in 1938. At about this time the use of sulfonamide therapy was becoming widespread. Benbow, Smith and Grimson,⁶ in 1944, again reviewed the literature and reported 2 cases in which surgical drainage, vitamin therapy, roentgen therapy and sulfonamide therapy were used; both patients recovered. In 1945, Binford and Lane⁷ reported another case in which the infection was fatal and the diagnosis was made at the time of necropsy. The literature on the general subject was again reviewed in 1946 by Kirby and McNaught.⁸ They added 2 cases, in both of which the outcome was fatal. One of the patients reported by them received short courses of sulfadiazine therapy, each time with improvement, but the patient was seen late in the course of his illness and sulfonamide therapy was not adequate. Including the cases reported by Kirby and McNaught, up to the time of their report the total number of cases was 34. Of the 34, only 3 could be considered for certain as examples of recovery. One was the case of Madura foot mentioned previously and the other 2 were those in which the patients received the benefit of sulfonamide therapy in addition to surgical drainage.

In addition to the cases mentioned and reported by Kirby and McNaught, there are two other reports in the literature, both of which appeared in 1946. One was a case reported by Shaw, Holt and Ray.⁹ The patient was a 32 year old white woman suffering with a pulmonary infection simulating tuberculosis. The diagnosis was established by bacteriologic study of the pleural fluid. The recovery of the patient was attributed to the use of penicillin combined with surgical drainage of the empyema cavity as well as surgical drainage of an associated abscess in the right buttock. It should be mentioned, however, that this patient received in addition potassium iodide, thymol and sulfadiazine. The use of sulfadiazine was followed by definite clinical improvement. The other report referred to earlier in this paragraph is that by Calero.¹⁰ The patient was a 12 year old white girl suffering with "pleuropulmonary fistulae." *N. asteroides* was isolated from the fluid obtained from the fistulas and from the sputum. This patient received several courses of sulfonamide drugs and two courses of penicillin. She was dismissed as cured; however, at the time of dismissal the sedimentation rate was still elevated. Calero pointed out that the final outcome could not be stated at the time of the report.

It is evident that if one excludes the case of Madura foot cured by amputation and the case in which the disease was treated with an antigen and in which the final outcome is not known, only 4 of the 36 cases could be considered as clearcut examples of recovery. All 4 patients received sulfonamide therapy in addition to other forms of treatment. Two received penicillin. In view of studies carried out in our laboratory,¹¹ as well as by Drake,¹² there is reason to doubt whether *N. asteroides* is sensitive to the action of penicillin.

We are reporting a case of *Nocardia asteroides* infection simulating pulmonary tuberculosis in which all studies failed to confirm the diagnosis of tuberculosis. On the other hand, cultures of empyema fluid were positive for *N. asteroides*. Penicillin and streptomycin therapy had no effect on the course of this infection. Intensive sulfadiazine therapy was followed by what appears to be a complete recovery. The case to be reported is of further interest because no surgical or other treatment was employed after intensive sulfadiazine therapy was begun both by the intrapleural and by the oral route. Cultures did not become negative until after this treatment was instituted and, as has already been stated, penicillin and streptomycin were ineffective.

REPORT OF CASE

The patient was a white male physician, 26 years of age. He registered first at the Mayo Clinic on April 27, 1944. According to the history, he was said to have arrested minimal pulmonary tuberculosis. The Mantoux reaction had been negative in 1940 but had become positive in May 1942. Roentgen-

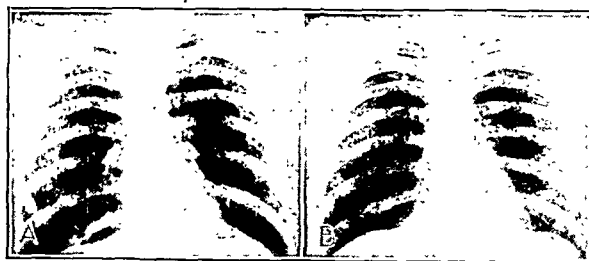


Fig. 1.—A, Sept. 4, 1944. Infiltration laterally in the first and second anterior interspaces on the right immediately prior to the institution of pneumothorax therapy. B, Oct. 18, 1944. Pneumothorax on the right after closed pneumonolysis.

ograms of the thorax taken at the time, however, were reported as negative. In November 1943, at which time the patient applied for a commission in the armed services, a routine roentgenogram of the thorax was said to have revealed a minimal lesion in the apex of the right lung. Repeated examinations of sputum did not reveal acid-fast bacilli. On one occasion a questionable positive sputum was reported, but this was never confirmed. Cultures of the sputum were also negative. In spite of these negative results but because of the roentgenographic findings, the patient spent four months on a modified rest regimen.

The patient was then examined at the clinic, and roentgenograms of the thorax revealed that during this interval the minimal lesion in the apex of the right lung had become smaller. Two months later (June 28, 1944) a follow-up roentgenogram revealed an increase of the infiltration in the apex of the right lung with slight fibrosis surrounding an area of questionable cavitation (fig. 1A).

The patient then was referred to Mineral Springs Sanatorium, Cannon Falls, Minn. After a short period of rest in bed, artificial pneumothorax on the right side was instituted. This treatment was given on the request of the patient despite the fact that efforts to obtain bacteriologic proof of the presence of tuberculosis had failed. Guinea pig inoculations of gastric contents obtained shortly before his admission to the sanatorium

3. Henrici, A. T.: *Molds, Yeasts, and Actinomycetes: A Handbook for Students of Bacteriology*, New York, John Wiley & Sons, Inc., 1930, p. 249.

4. Goldsworthy, N. E.: Pulmonary Actinomycosis Caused by an Acid-Fast Species of Actinomycetes, *J. Path. & Bact.* **45**: 17-27 (July) 1937.

5. Kessel, J. F., and Goolden, E. B.: A Comparison of Strains of Actinomycetes Recovered from Human Lesions, *Am. J. Trop. Med.* **18**: 689-699 (Nov.) 1938.

6. Benbow, E. P., Jr.; Smith, D. T., and Grimson, K. S.: Sulfonamide Therapy in Actinomycosis: Two Cases Caused by Aerobic Partially Acid-Fast Actinomycetes, *Am. Rev. Tuberc.* **49**: 395-407 (May) 1944.

7. Binford, C. H., and Lane, J. D.: Actinomycosis Due to *Nocardia asteroides*, *Am. J. Clin. Path.* **15**: 17-23 (Jan.) 1945.

8. Kirby, W. M. M., and McNaught, J. B.: Actinomycosis Due to *Nocardia asteroides*: Report of Two Cases, *Arch. Int. Med.* **78**: 578-591 (Nov.) 1946.

9. Shaw, F. W.; Holt, R. A., and Ray, E. S.: Pulmonary Actinomycosis Due to Actinomycetes *Asteroides*, *Virginia M. Monthly* **73**: 362-368 (Aug.) 1946.

10. Calero, C.: Pulmonary Actinomycosis (Report of the First Case Observed in the Isthmus of Panama), *Dis. of Chest* **12**: 402-408 (Sept.-Oct.) 1946.

11. Heilman, F. R.: Unpublished data.

12. Drake, C. H.: The Action of Penicillin on Several Genera of the Actinomycetales, *J. Bact.* **51**: 199-203 (Feb.) 1946.

were negative for *Mycobacterium tuberculosis*. The patient obtained an excellent collapse which was improved by closed pneumonolysis of a small adhesive band (fig. 1B).

Three months after admission to the sanatorium the patient performed part time work. He continued in good health for the next ten months. During this interval he received weekly pneumothorax refills. In October 1945 he contracted an acute respiratory infection with cough. Roentgenologic examination of the thorax at that time revealed an area of infiltration in the lower lobe of the right lung beneath the pneumothorax. At that time examination of the blood revealed the concentration of hemoglobin to be 16 Gm. per one hundred cubic centimeters of blood. Leukocytes numbered 8,200 per cubic millimeter of blood and the sedimentation rate by the Westergren method was 8 mm. in one hour.

The patient was hospitalized and was given 80,000 units of penicillin intramuscularly each day for one week. Under this management the area of infiltration in the lower lobe of the right lung cleared. He was dismissed from the hospital with a slight residual nonproductive cough. One month later he was readmitted to the hospital because of fever with sweating, generalized malaise and cough. At the time of his admission his temperature was 99 F. and the pulse rate was 100 beats per minute. The laboratory studies gave negative results at the time of this admission except for the fact that the sedimentation rate had now risen to 80 mm. in one hour by the Westergren method. Three examinations of sputum at that time were negative for acid-fast bacilli. No tubercle bacilli could be identified

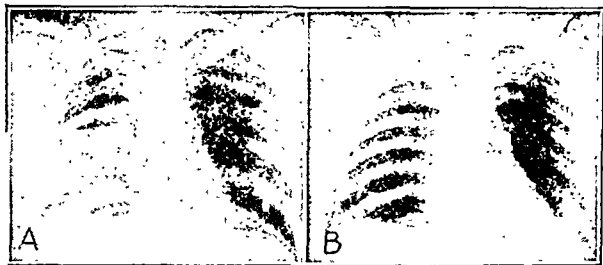


Fig. 2.—A, Jan. 28, 1946. Empyema in the right pleural space with fluid level in the sixth interspace posteriorly. B, Jan. 9, 1947. Present status of patient. Pleural pocket on the right obliterated with residual thickened pleura and some contraction of the right hemithoracic cage, specially at the apex.

in gastric washings either by smear or by culture. Penicillin therapy was again begun. The patient received 160,000 units daily by the intramuscular route for one month. Roentgenograms of the thorax at weekly intervals revealed gradually increasing amounts of fluid in the right pleural space (fig. 2A). At the end of this course of penicillin therapy a bronchoscopic examination was performed but the results were negative. The sedimentation rate at this time was 101 mm. in one hour by the Westergren method. Two weeks later thoracentesis on the right side was performed and 200 cc. of clear fluid was removed. Cultures of this fluid were reported negative. Smears for tuberculosis were negative and in 2 guinea pigs inoculated with this material evidence of tuberculosis failed to develop.

The patient then was referred back to Mineral Springs Sanatorium for further care. Aspirations of the thorax were carried out three times per week for the next six or seven weeks. The amount of fluid withdrawn varied from 3 to 6 fluidounces (89 to 177 cc.). The fluid was clear and attempts to demonstrate the presence of acid-fast bacilli were unsuccessful. On March 4, 1946, for the first time purulent material was obtained at the time of aspiration. Since tuberculosis was suspected at all times, 0.25 to 0.5 Gm. of streptomycin was left in the pleural space after each aspiration. This procedure was continued every two to five days for the next four weeks. Subsequently an attempt was made to obliterate the space by an oleothorax. This procedure was soon abandoned as not being feasible.

Bacteriologic studies of the first purulent material revealed the presence of numerous colonies of *N. asteroides* in pure

culture. The presence of this organism in the pleural fluid was demonstrated repeatedly. The pleural fluid soon became thick and hemorrhagic. On several occasions penicillin (60,000 to 100,000 units) was added to the 0.5 Gm. of streptomycin introduced into the pleural cavity. In spite of this treatment, bacteriologic studies of the pleural fluid continued to show many colonies of *N. asteroides*.

The organism was tested for sensitivity to streptomycin and penicillin. Growth on blood agar was inhibited by 5 units of streptomycin per cubic centimeter of medium but not by 2.5 units. Growth was not inhibited by 100 units of penicillin per cubic centimeter of medium.

Tests for sensitivity to sulfadiazine were carried out on plates of a synthetic medium used by MacLeod,¹³ to which agar had been added. The organism was completely inhibited by sulfadiazine in dilutions of 1:80,000 (1.25 mg. per hundred cubic centimeters) and almost completely inhibited by dilutions of 1:160,000.

A substance for cutaneous tests was obtained from another strain of *N. asteroides* isolated some years ago. The material was prepared according to the method described by Drake and Henrici¹⁴ for the crude extract of unheated defatted organisms. After filtration through a Berkefeld candle and culture for sterility, 0.5 cc. was injected intracutaneously on the volar surface of the forearm of the patient and of a control person having skin of a similar texture. Twenty-four hours later at the site of injection on the patient there was a well demarcated, raised, dark strawberry red area of edema 13 mm. in diameter. The reaction was accentuated at forty-eight hours. Seven days after injection there remained a clearly outlined but faint, pigmented area at the site of the reaction. Twenty-four hours after injection the control showed a faint erythema but no edema at the site of injection. The erythema had faded in forty-eight hours and left no residual pigmentation.

The edematous reaction to the extract, occurring in the patient and becoming maximal at forty-eight hours, was similar to that produced by Drake and Henrici using a similar extract in animals experimentally sensitized to *N. asteroides*. It was evident, however, that the cutaneous sensitivity of the patient to the *N. asteroides* extract was not of the order of activity to tuberculin usually seen in patients suffering with tuberculosis.

Administration of streptomycin and penicillin was discontinued on April 8, 1946. Two and a half grams of sulfadiazine in 20 cc. of isotonic solution of sodium chloride was administered by the intrapleural route. Sulfadiazine was administered orally in amounts of 90 grains (6 Gm.) per day. Specimens of the pleural fluid obtained on the second, fourth and seventh days after the initiation of sulfonamide therapy and cultured on mediums containing para-aminobenzoic acid yielded a few colonies of *N. asteroides*. Previous cultures had yielded many colonies. Specimens obtained nine days after the initiation of sulfonamide therapy required concentration to produce any growth.

Then it was decided to treat the patient even more intensively with sulfadiazine. The oral daily dose was increased to 135 grains (9 Gm.) per day and the patient also was given approximately the same amount of sodium bicarbonate orally. Complete examinations of the blood and urine were performed every second day following the institution of this program, which was continued for five months. On several occasions sulfadiazine therapy was interrupted for twenty-four hours because of the appearance of hematuria. Except for these intervals, the patient received continuous treatment with sulfadiazine. At the beginning the instillations were performed twice or three times per week. Later the injections were made at weekly intervals. In the beginning the amount administered was 5 Gm. in 40 cc. of isotonic solution of sodium chloride. Later

13. MacLeod, C. M.: The Inhibition of the Bacteriostatic Action of Sulfonamide Drugs by Substances of Animal and Bacterial Origin. *J. Exper. Med.* 72: 217-232 (Sept.) 1940.

14. Drake, C. H., and Henrici, A. T.: *Nocardia Asteroides*: Its Pathogenicity and Allergic Properties. *Am. Rev. Tuberc.* 48: 184-198 (Sept.) 1943.

the volume of the mixture was decreased. The sulfadiazine levels were held between 7 and 16 mg. per hundred cubic centimeters of blood. The sulfadiazine level in the pleural fluid varied between 24 and 86 mg. per hundred cubic centimeters. Specimens of pleural fluid obtained on the fourteenth, sixteenth and seventeenth days after the initiation of sulfadiazine therapy did not show growth of organisms on unconcentrated cultures. When the material was concentrated by centrifugation and plated on medium containing para-aminobenzoic acid an occasional colony of *N. asteroides* was found. *N. asteroides* isolated one month after the institution of sulfadiazine therapy was found to be as sensitive to the drug as the cultures isolated before such treatment was started. The last positive culture was obtained on May 16, thirty-eight days after sulfadiazine therapy was started. Five subsequent cultures were negative.

Three weeks after the beginning of sulfadiazine therapy, only 1 fluidounce (30 cc.) of cloudy fluid could be obtained at each aspiration. Intrapleural pressures varied from minus 7 to plus 11 cm. of water. Approximately ten weeks after the onset of this form of treatment the character of the pleural fluid changed abruptly from turbid to bloody and then to a clear amber type of fluid. A few days later only 8 cc. of pleural fluid could be aspirated. Intrapleural sulfadiazine therapy was discontinued. One week later no fluid or pleural pocket could be demonstrated. During treatment with sulfadiazine the patient showed marked clinical improvement. His cough subsided. He gained weight and also regained his appetite and sense of well-being. Roentgenographic examination of the thorax revealed improvement which paralleled his clinical course.

Oral sulfadiazine therapy was continued for a total of approximately five months. The total amount of sulfadiazine administered by the intrapleural route was 75 Gm. The total amount administered by the oral route was 1,268 Gm. (approximately 3.4 pounds [apothecaries' weight]).

At the time of this writing, there is little evidence of pulmonary disease (fig. 2B). The physical examination gives negative results, as do the complete blood studies and urinalysis. The sedimentation rate is 8 mm. in one hour by the Westergren method. The patient has not received treatment for fourteen months. He has been working steadily at his former occupation and is in excellent general health.

SUMMARY AND CONCLUSIONS

Nocardiosis is not a new disease but it may likely be an unrecognized one. The infection is due to *Nocardia asteroides*, formerly called "Actinomyces asteroides." The clinician will do well to consider the presence of this disease in lesions simulating tuberculosis when bacteriologic confirmation of the diagnosis of tuberculosis is lacking. Before the era of modern chemotherapy, recovery from this infection was exceedingly rare. Of the 36 cases reported in the literature through 1946, only 4 (excluding a case of Madura foot cured by amputation) could be considered clearcut examples of recovery. In all 4 cases the patients received sulfonamide therapy in one form or another in addition to other forms of treatment. We have reported a case of nocardiosis simulating pulmonary tuberculosis in which complete recovery appeared to have followed intensive therapy with sulfadiazine without surgical intervention. The antibiotics, penicillin and streptomycin, had failed to control the infection.

It would appear from the studies carried out in our laboratory as well as those carried out elsewhere that sulfadiazine is the drug of choice in the treatment of nocardiosis. The sensitivity of *N. asteroides* to penicillin and streptomycin is not sufficiently great to suggest that these agents will control the infection unless, perhaps, they are combined with sulfonamide therapy.

It is suggested that the term "actinomycosis" be restricted to infection due to *Actinomyces bovis* and that "nocardiosis" be applied to infection due to *Nocardia asteroides*. It seems reasonable to conclude that patients suffering with this infection should recover if the condition is diagnosed early and is treated intensively with sulfadiazine.

Council on Physical Medicine

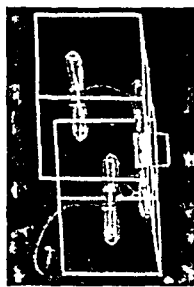
The Council on Physical Medicine has authorized publication of the following reports.

HOWARD A. CARTER, Secretary.

CHRISTENSEN HEAT CRADLE ACCEPTABLE

Manufacturer: Christensen Heat Cradle Company, 535 Bright Street, San Francisco.

The Christensen Heat Cradle is a baker which consists of an adjustable and collapsible steel framework 61 cm. (24 inches)



Christensen
Heat Cradle

high, 61 cm. (24 inches) wide and 46 cm. (18 inches) long and weighs approximately 3.6 Kg. (8 pounds). It supports three pairs of electric light-bulbs of elongated form in such a way that when covered by bedclothes it forms a tent under which heat can be applied to an upper extremity or to one or both lower extremities of a patient. The height of the lights can be adjusted, and each has its own switch. Each light is guarded by an arrangement of metal loops which not only protect the light from strains and blows but also protect the skin from contact, which, as is well

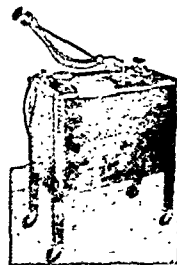
known, need not be longer than momentary to cause unfortunate burns in some patients.

The Council on Physical Medicine voted to include the Christensen Heat Cradle in its list of accepted devices.

SANBORN METABULATOR 1947 ACCEPTABLE

Manufacturer: Sanborn Company, 39 Osborn Street, Cambridge 39, Mass.

The Sanborn Metabulator 1947 (Sanborn Metabolism Tester) is an instrument designed for the determination of basal metabolic rates. It is a wooden cabinet with four legs mounted on casters, which make it easily portable. Its over-all dimensions are 33 by 65 by 89 cm. (13 by 25½ by 35 inches), and its weight uncrated is 43 Kg. (95 pounds). A motor-driven fan circulates the air in the system, which consists of a bellows, a container for the absorbent for carbon dioxide and a set of rubber tubes leading to the mouthpiece and the patient. The bellows bears a recording device, which traces on a motor-driven drum. The tracing is made by a stylus on a special type of paper that does not require ink. When not in use, the tubing that leads to the bellows hangs in a special place designed to avoid kinking. The apparatus is accompanied by a set of graduated straight edges intended to facilitate computation of the results.



Sanborn Metabulator
1947.

When tested for a period of weeks by a practicing endocrinologist, the instrument gave a satisfactory performance; it was found to be well designed, compact and attractive. The investigator took occasion, however, to call to mind the variability of results obtained from basal metabolic rate determinations, even when done carefully under favorable conditions, and to urge that all determinations of metabolic rate, whether made with this machine or any other, should run not less than ten minutes.

The Council on Physical Medicine voted to include the Sanborn Metabulator 1947 in its list of accepted devices.

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SATURDAY, JANUARY 17, 1948

REBATES, KICKBACKS, COMMISSIONS AND MEDICAL ETHICS

The pride of medicine as a profession has always been its freedom from the taint of barter and trade in the sick patient. Physicians must give their wholehearted devotion to the care of the patient; no other objective must be given precedence over considerations of the patient's need. Nevertheless, the charge is made that some physicians have forgotten the ethical principles that prevail in the relationship between doctor and patient and have selected the surgeon willing to make the greatest division of fees rather than the one best suited to perform the operation. Ophthalmologists have sent the patient for lenses to opticians who returned a proportion of the fee rather than to the optician who rendered the highest quality of optical service. Occasionally orthopedic surgeons and others who utilize the work of the maker of braces, splints and elastic bandages have been willing to accept commissions from such manufacturers and have delegated the procurement of these accessories to the agency offering the largest commission rather than to the one most painstaking in production and most reasonable in price. From time to time criticism has been leveled against pharmacists who have offered commissions to physicians on the prescriptions sent to them and to the physicians who have accepted such commissions. Wherever barter and trade have insinuated their insidious and evil aspects into the practice of medicine, the quality of the service has depreciated. The morals of the physicians and the commercial agencies that deal in these unwholesome profits in this marketing of medical care have already deteriorated.

From the beginning of its entrance on the medical scene, the American Medical Association has fought this menace to the quality of medical service and to the good repute of medical practice. Resolutions have been passed by the official bodies of the Association unequivocally condemning such practices. The Judicial Council has repeatedly urged the expulsion or other action

against physicians proved to have participated in such procedures. The leaders of surgery, ophthalmology, orthopedic surgery and pharmacy have been unanimous in pointing out the extent to which such commercial considerations may break down the good repute of the specialties concerned. The American College of Surgeons adopted an oath to be taken by its fellows to the effect that they would not participate in the secret division of fees. The Principles of Ethics of the American Medical Association have declared the unethical character of such divisions—direct or indirect.

Now the development of greater complexity in medical practice and in medical relationships has introduced new factors into this problem of barter and trade. The development of roentgenology as an important medical specialty and the establishment of clinical pathologic laboratories to which physicians send patients for the making of highly technical and often costly tests have introduced new sources of rebates, kickbacks and commissions. In some communities means have been proposed for evading the condemnation of medical organizations and societies through the establishment of corporations, cooperative laboratories and roentgenologic offices of multiple ownership.

As might have been anticipated, the ultimate development was recognition by governmental agencies of the fact that the unprotected public was being exploited by such methods. The first warning and one of tremendous significance was the indictment by the Department of Justice of two manufacturing optical agencies and of a considerable number of ophthalmologists who participated in a plan which took hundreds of thousands of dollars from unknowing patients. A full report appeared in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION when the Department of Justice took this action during 1946. A popular periodical with millions of circulation has called on the medical profession to cleanse itself as it has repeatedly cleaned its own house in the past. The House of Delegates asked the Secretary of the American Medical Association to call the situation to the attention of every state and county medical society in the nation and to urge on these societies the initiation of the necessary steps toward ridding medical practice of these parasites. The Better Business Bureaus in several large communities, notably Los Angeles, have begun a campaign of enlightenment of the public regarding the extent to which these abuses prevail in their communities; they too have called on the medical profession to take the necessary steps to stop this pernicious practice.

The housecleaning has been too long delayed. Biology has proved that any living organism that tries to maintain itself in the presence of filth invariably dies. The Board of Trustees of the American Medical Association therefore calls on leaders of the medical profession in

every community in which the Association is represented to act promptly, remembering, however, the necessity for proceeding in due form by the filing of formal charges against physicians known to be participating in such methods, thus offering an opportunity for the presentation of evidence and a suitable hearing so that the innocent may not be harmed but the guilty may be properly exposed and punished.

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THE CLEVELAND SESSION

The first interim session of the American Medical Association to include a meeting of the House of Delegates and a scientific program for general practitioners was held in Cleveland January 5 to 8. The total registration, which on this occasion included Fellows, members, interns and residents, was well in excess of 3,000. The minutes of the House of Delegates will indicate the important problems considered by the house. These included the adoption of an entirely new procedure for the functioning of this important representative body. The streamlining of its operation will enable the work to be carried on much more efficiently while sustaining the democratic principles on which the House of Delegates operates. Special consideration was given by the House of Delegates to such immediately pressing problems as the supply of nurses, of interns and residents, the relationship of the laboratory and roentgenology to hospital insurance practices, the place of the hospital in medical care and various plans that have been developed for extending medical care to the mass of the people and particularly to those in rural areas.

During the course of the session, the Board of Trustees distributed to the House of Delegates a complete record of the extent to which the Association has made progress in achieving the objectives of its ten point National Health Program. This report will be published soon in *THE JOURNAL*. It indicates that the American Medical Association is moving steadily forward in a systematic and organized manner to meet the needs of the American people for a wider distribution of a high quality of medical care.

The House of Delegates reaffirmed its approval of the World Medical Association and of the activities of the Board of Trustees in furthering its work.

Especially significant was the action of the House of Delegates in relation to extending still further the

rapidly expanding activities of the Association. By modification of the by-laws the subscription price of *THE JOURNAL* including fellowship was advanced to \$12 annually. Consideration was given also to the inclusion of additional sections in the scientific body of the Association.

The exhibits of this Interim Session were well up to the standard of those of the Annual Session and constitute an important portion of the graduate educational work of the American Medical Association. Simultaneously with the meetings of the House of Delegates, the section programs and the exhibits, were meetings which included a meeting of the Congress on Industrial Health conducted under the auspices of the Council on Industrial Health.

The program included many important papers, demonstrations and exhibits. Another feature of the occasion was the holding of a "Grass Roots Conference," designed to develop closer relationship between the American Medical Association, the county medical societies and the individual physicians. This conference was devoted principally to problems of the general practitioner but included also consideration of voluntary health insurance plans, hospitalization insurance plans and improvement of medical facilities in rural areas.

THE PRESIDENT'S MESSAGE

In his address to the Congress, made January 7, President Harry S. Truman stated his objectives in the field of health in the following quotations:

The greatest gap in our social security structure is the lack of adequate provision for the nation's health. We are rightly proud of the high standards of medical care we know how to provide in the United States. The fact is, however, that most of our people cannot afford to pay for the care they need.

I have often and strongly urged that this condition demands a national health program. The heart of the program must be a national system of payment for medical care based on well tried insurance principles. This great nation cannot afford to allow its citizens to suffer needlessly from the lack of proper medical care. Our ultimate aim must be a comprehensive insurance system to protect all our people equally against insecurity and ill health.

Then, following a discussion of education, he continued:

The government's programs for health, education and security are of such great importance to our democracy that we should now establish an executive department for their administration.

In the meeting of the House of Delegates last week in Cleveland, the American Medical Association, through this policy-making body, reaffirmed its point of view in opposition to compulsory sickness insurance. The House of Delegates received from the Board of Trustees a detailed statement indicating the progress that has been made toward achieving the objectives of the Association's own ten point National Health Program. Specifically, the ideals of freedom to which

President Truman referred will be most certainly maintained when the needs of the American people for medical service are met on a local community and state basis rather than on a system centrally controlled. Many millions of our citizens and their families are already protected against the costs of hospitalization and sickness by the Blue Cross Plans, the nonprofit voluntary plans for paying the costs of medical care; and the long established private insurance companies. Already the American people are far on the way toward meeting the President's standard of "a national system of payment for medical care based on well tried insurance principles." These are not, however, "compulsory." The President was apparently careful to avoid that odious word in his presentation, although he used it frequently in his previous message on health. There is not the slightest evidence that he has departed from his previous insistence on compulsory sickness insurance federally administered, as his answer to the sickness problem.

Through its National Health Program, the American Medical Association is furthering the advancement of medical science by research, by the improvement of industrial health, by better and more widely available medical education, by the expansion of preventive medical services, by the fostering of new hospitals and health centers, and in many other ways. The answer of the medical profession has not been made in words alone but in positive action.

For many years the medical profession has favored assembling and coordinating all the health functions of our national government in a single agency with an administrative head in the cabinet. Apparently the President anticipates the enactment of legislation which will combine health, education and security in one federal department. Whether or not any or all of these would suffer in such a system remains to be seen. If health is, indeed, as many a great statesman has asserted, the first consideration of government, medicine as the profession responsible for this function of our civilization should not be asked to play a subsidiary role.

THE GENERAL PRACTITIONER AWARD

At the interim session of the American Medical Association in Cleveland last week the House of Delegates awarded to Dr. Archer Chester Sudan of Kremmling, Colo., the gold medal for the general practitioner who has rendered exceptional service to his community.

Dr. Sudan left the University of Chicago, where he held a research and teaching position, in 1926 and stopped to fish in the mountain village of Kremmling, Colo.—population, 567. The story goes that the village druggist was directing him to the likeliest spot when

one of the villagers came into the drug store and said that he had heard that there was a physician in the town and that the physician was needed immediately in a little home on the outskirts of the village where there were four children with acute tonsillitis in one bed. The doctor answered this call. Kremmling, Colo., was isolated from any type of medical or hospital care. It is situated in an area where the winters are severe with heavy snowfall, low temperatures and hazardous roads over mountain passes. After remaining in Kremmling for a year, Dr. Sudan requested an extension of his leave and ultimately resigned from the staff of the University of Chicago. He remained twenty-one years in Kremmling in the general practice of medicine, serving an area



ARCHER CHESTER SUDAN, M.D.
AWARDED GENERAL PRACTITIONERS MEDAL

that was encompassed by an 80 mile radius. Many of the calls were made in a bobsled in below zero weather with aid from farmers, who carried him over short stretches of the trip. He was truly a family physician, and the families in his area looked to him as a physician and counselor.

In 1946 Dr. Sudan was made president of the Colorado State Medical Society—apparently the first time in the history of the society when a man from a completely rural area was selected for this office. Dr. Sudan is devoted to public health education; he served as a member and secretary of the school board in Kremmling for many years.

The receiver of the award was born in Sioux Falls, S. D., Aug. 15, 1892, entered the University of Chicago in 1916, received the degree of bachelor of science in

1922 and master of science in 1923 and transferred to Rush Medical College on a LaVerne Noyes Scholarship, receiving the doctor of medicine degree in 1926. He served his internship at the Denver General Hospital.

The selection of Dr. Sudan was widely hailed throughout the nation as a fine recognition of the services rendered by general practitioners in our country. When Mr. Oscar Ewing, Federal Security Administrator, presented him with the medal, Dr. Sudan replied by stating that he took it as a recognition not only of himself but of the almost two hundred other general practitioners who had been nominated for the award and also of some hundred thousand other general practitioners who so greatly serve their nation. The other two candidates nominated to the House by the Board of Trustees were Dr. Jacob T. Oliphant, Farmersburg, Ind., and Dr. W. L. Pressly, Due West, S. C. The award will be presented annually at the interim session of the American Medical Association.

PSYCHOSOMATIC MEDICINE AND "THE ART OF MEDICINE"

For fifty years deans of medical schools and speakers before graduating medical classes have stressed the never to be forgotten importance of practicing the art as well as the science of medicine. The art of medicine, they said frequently, was not taught in medical schools but gained only after long experience in practice. Knowledge of its application came only with intimate, personal knowledge of the patient and of his family background and situation in life. Because of the numerous advances in the science of medicine greatest interest was directed toward learning specific details. Both the teaching and learning processes tend to follow more easily channels of scientific fact wherein definite questions may be posed and answered rather than the abstractions of philosophy. The art of medicine has become more a historical expression than a living diagnostic and therapeutic concept.

Patients too frequently become case numbers; they are recorded as well or poorly developed and nourished persons with a chief "complaint" and one or more minor "complaints." They are considered in the case history as patients with a negative or noncontributory past, with perhaps a nondescript spouse and three to five siblings, all living and well or otherwise but in any case not relevant to the immediate illness. Patients are examined minutely, all laboratory, x-ray and other mechanical aids being used to detect the cause of the chief and minor complaints. Examinations are frequently made by several doctors, none of whom may have had opportunity to become well acquainted with the patient as a person.

In large clinics a key internist summarizes the observations and tries to determine presence or absence of

somatic disease. Positive organic lesions are expeditiously and scientifically treated, whereas those patients who do not have obvious organic disease are classified as psychoneurotic. The therapy for patients with psychoneuroses all too often consists of encouragement or injunction to refrain from some or all of their pleasures and relaxations. Such restrictions tend to complicate, rather than relieve, the patient's medical problem. Patients such as these form a fertile field for the quacks and cultists, who may be amazed at the power of simple suggestion, whether accompanied by the laying on of hands, "adjusting" the spine, or administering placebos.

Offices for diagnosis and healing of disease are increasingly concerned with patients of whom many exemplify repeated failures of application of *the art of medicine*. Meanwhile, investigators of psychologic phenomena and personality patterns have laid the foundation for the technics of psychosomatic diagnosis and therapy. These constitute essentially an attempt at systematization of the art of medicine.

In this issue of *THE JOURNAL*, page 147, Dr. Hart¹ discusses many of the methods and problems in the application of these technics. A rapidly growing volume of literature² on this subject merits the attention of every practicing physician.

Time, patience, personal knowledge of the domestic situation of the patient and an attitude of friendly interest appear to be prerequisites in the application of even the simplest technics. Patients with psychoneurotic disease may fail to show any evidence of "nervousness," but deeply buried repressions and conflicts reveal themselves as apparent, or later, actual organic disease. Heart disease, ulcer, colitis, apparent thyrotoxicosis, asthma and alcoholism are indicted as frequent expressions of these conflicts. Functional symptoms related to one organ disappear when the patient learns that the organ is not actually organically affected and appear elsewhere. Relief of symptoms through the scientific somatic approach becomes pursuit of a will o' the wisp. The psyche and the soma must be treated as a whole.³ Such technics now are required as part of the diagnostic and therapeutic armamentarium of the practicing physician. The art of medicine has returned in the scientific dress of the psychosomatic technics; these cogent reasons reemphasize the necessity for the personal doctor-patient relationship.

1. Hart, A. D.: Psychosomatic Diagnosis, *J. A. M. A.*, this issue, p. 147.

2. Dunbar, Flanders: Psychosomatic Diagnosis, New York, Paul B. Hoeber, Inc., 1943. Weiss, E., and English, O. S.: Psychosomatic Medicine: The Clinical Application of Psychopathology to General Medical Problems, Philadelphia, W. B. Saunders Company, 1943.

3. Alvarez, W. C.: Psychosomatic Medicine That Every Physician Should Know, *J. A. M. A.* 135:704-708 (Nov. 15) 1947. Bennett, A. E., and Engle, B.: Faulty Management of Psychiatric Syndromes Simulating Organic Disease, *ibid.* 130:1203-1208 (April 27) 1946. Wearn, J. T.: The Challenge of Functional Disease, *ibid.* 134:1517-1520 (Aug. 30) 1947. Strecker, E. A.: Psychosomatics: The Liaison Between Internal Medicine and Psychiatry, *ibid.* 134:1520-1521 (Aug. 30) 1947.

Current Comment

TRANSCRIPTION

"MUSIC WITH YOUR MEALS"

The Bureau of Health Education announces on page 191 a release of another series of electrical transcriptions, which brings the number of transcribed radio health program series to seventeen. The new series has been prepared with the cooperation of the Council on Foods and Nutrition, whose members furnish the materials and interviews for the recordings. This series represents a new and practical approach to the subject of food and nutrition. The programs were written in terms of situations which face the housewife, such as what to serve for breakfast, how to pack the school lunch and the everlasting problem, to eat or not to eat between meals. Vitamins have been subordinated to viands and minerals to menus. To make the entire broadcast still more palatable, harp music has been added as interludes to punctuate the discussions. These recordings are available to state and county medical societies and to other agencies, subject to medical society approval. Electrical transcriptions distributed by the Association on a loan basis in 1947 are estimated to have originated more than five thousand local broadcasts across the nation and in Hawaii and Alaska. Eight state medical associations now act as subdistributing centers for these transcriptions. Additional series planned for 1948 will be announced at approximately three months' intervals.

SENSITIZATION TO THE Hr FACTOR BY BLOOD TRANSFUSIONS

Sussman¹ reports the case of a man aged 60 who was admitted to the Beth Israel Hospital with a diagnosis of cancer of the cecum. Four months before admission the patient had received an uneventful transfusion of 500 cc. of blood. One week before admission another transfusion was begun, but it was terminated after about 400 cc. of blood had been administered because the patient contracted a chill followed by profuse sweating. Routine blood grouping revealed that the patient's blood was group B, Rh positive. Cross matching with group B, Rh-positive blood from the bank revealed questionable compatibility. Routine slide *conglutination* cross matching revealed prompt clumping of the donor's cells by the recipient's serum. Further study indicated that the patient was of group B, Rh₁Rh₂ (Hr negative). A slide sensitivity test revealed that the patient's serum clumped Rh-negative blood, Rh₂ blood, but failed to clump Rh₁ blood. This latter subsequently was shown to be Hr negative. Testing of several samples of group B, Rh₁ blood revealed agglutination of 15 of the 20 specimens tested. The 5 nonagglutinated specimens were tested with standard Hr serum and were found to be Hr negative. At the time of the initial transfusion the patient's blood had been grouped as B, Rh positive, and he had received corresponding blood. The Hr grouping of this blood was unknown. Since only 20 per cent of

random blood samples are Hr negative, it seems safe to assume that this transfusion was Hr positive. At the time of the second transfusion it was discovered that the patient was given group O, Rh-negative blood. This resulted in a moderately severe transfusion reaction. A characteristic antibody stimulation or sensitization apparently occurred at the first transfusion, manifested by an antibody-antigen reaction with the Rh-negative, Hr-positive cells of the second transfusion. Sussman argues that a third transfusion with Hr-positive cells in this sensitized patient would undoubtedly provoke a severe, if not fatal, reaction. The patient was given a transfusion of 500 cc. of group B, Rh₁Rh₂ (Hr negative) blood without reaction and with a resultant rise of hemoglobin from 8 to 9 Gm. Subsequently several transfusions of group B, Rh₁Rh₂ (Hr negative) blood were administered without any untoward reaction. The case demonstrates the danger inherent in the use of Rh-negative blood for any but Rh-negative recipients. Rapid slide testing of serum will further reduce the incidence of reactions to transfusion.

PROBLEMS OF THE AGING

Much planning for the care of the chronically ill is being done in at least eight states. Three reports have been published by the state of New York.¹ Though less than one third of persons chronically ill are aged (over 65) the group 65 and over nevertheless constitutes two thirds of the chronically ill who need care outside the home. Planning for the aged must therefore be closely correlated with planning for the chronically ill. Age 65 does not necessarily bring with it disability. The report of Chicago's recent health survey,² for instance, estimated that of Chicago-Cook County's 200,000 persons over 65 years of age, 40 per cent were active and productive and only 16,000 (8 per cent) were chronically ill. Oldsters have many problems unrelated to chronic disease. At a public hearing of the New York State Joint Legislative Committee on Problems of the Aging, held Dec. 11, 1947 in New York,³ the following matters were discussed: medical care of the elderly (geriatrics); the increasing proportion of elderly in our population; employment problems; social service to old folks; workmen's compensation and our older worker; recreational needs of the aged; housing problems; education for the elderly, and the aged in our mental institutions. Legislators may well concern themselves with the group of voters 65 years of age and over who have doubled their numbers in the last twenty-five years. Ten and one-half million people are within this age group. In New York legislators are approaching these problems on the sound basis of public hearings addressed by men and women who are experts in the field and well qualified to define the problem and suggest remedies.

1. Planning for the Care of the Chronically Ill: (1) Regional Aspects, Legislative Document no. 78A, 1945; (2) Social and Institutional Aspects, Legislative Document no. 66A, 1946; (3) Program, Legislative Document no. 69, 1947.

2. Blue Print for a Healthy Community, Chicago, Advisory Committee, the Chicago-Cook County Health Survey, 1947.

3. A limited number of reports of the addresses given at this hearing are available on request to Sen. Thomas C. Desmond (chairman of the New York State Joint Legislative Committee on Problems of the Aging), 84 Broadway, Newburgh, N. Y.

1. Sussman, L. N.: Sensitization to the Hr Factor by Blood Transfusions. *Am. J. Clin. Path.* 17: 643 (Aug.) 1947.

ORGANIZATION SECTION

Proceedings of the Cleveland Interim Session

MINUTES OF THE INTERIM SESSION OF THE HOUSE OF DELEGATES OF THE
AMERICAN MEDICAL ASSOCIATION, HELD IN CLEVELAND, JANUARY 5-6, 1948

HOUSE OF DELEGATES

First Meeting—Monday Morning, January 5

The House of Delegates convened, in the Euclid Ballroom of the Hotel Statler, Twelfth and Euclid, Cleveland, and was called to order at 10:00 a. m. by the Speaker, Dr. R. W. Fouts.

Preliminary Report of the Reference Committee on Credentials

Dr. G. Henry Mundt, Chairman, stated that 138 delegates had registered up to the present time.

Roll Call

The Secretary called the roll and announced that a quorum was present.

General Practitioner's Award

Dr. E. L. Henderson, Chairman, Board of Trustees, presented the following statement:

"At a meeting of the Board of Trustees, following a meeting of the Council on Scientific Assembly, the Board decided that a General Practitioner's Medal should be awarded to the General Practitioner of the year."

The machinery set up for the selection of the recipient of this award was very similar to the machinery set up for selection of the recipient of the Distinguished Service Award for scientific achievement. The Executive Committee of the Section on General Practice of Medicine was selected to screen the nominations for the award and pass five names up to the Board of Trustees, in the same manner as is done in selecting the recipient of the Distinguished Service Award, and the Board of Trustees was to select three names of the five for submission to the House of Delegates, which would then vote by ballot for the recipient of the award.

Very wide publicity has been given to this matter, about the only difference between the Distinguished Service Award and the General Practitioner's Award being that anyone, any club, association, whether it is medical or otherwise, any individual in the country may send in a nomination for the General Practitioner's Award. As a result, there were approximately 180 nominations for that award. Many of these came from clubs, luncheon and women's clubs, from individuals, some old lady perhaps just scribbling a little note on a piece of paper wanting to nominate her family physician for this award. A great many of them came from medical societies. At this time the Board places in nomination the three men who have been selected to present to you, together with a biography of each, for this award: Dr. W. L. Pressly, aged 60, Due West, South Carolina; Dr. Jacob T. Oliphant, aged 60, Farmersburg, Ind., and Dr. Archer C. Sudan, aged 56, Kremmling, Colo. All of these physicians are in the general practice of medicine.

The Speaker appointed tellers who spread the ballot, and the Secretary announced that 157 delegates had been seated and that 144 votes had been cast, of which Dr. Pressly received 43, Dr. Oliphant 18 and Dr. Sudan 83. The Speaker declared Dr. Archer C. Sudan elected to receive the General Practitioner's Award since he had received the majority of the votes cast.

On motion of Dr. B. H. Minchew, Georgia, seconded by Dr. James R. McVay, Missouri, and carried, the vote was made unanimous, and Dr. E. L. Henderson, Chairman, Board of

Trustees, was requested to read the biographical statement regarding Dr. Sudan, but postponed such reading pending the receipt of the copy.

Order of Business

It was moved by Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried, that the order of business as listed in the Program for this session be followed.

Adoption of Proceedings of Atlantic City Session in 1947

The Secretary called attention to two changes in the printed proceedings of the Atlantic City Session, namely, that the name of Dr. Warren L. Allee, Missouri, should be substituted for that of Dr. A. R. McComas, Missouri, as a member of the Reference Committee on General Medical Practice, and that the heading of the third paragraph under "Introduction of Invited Guests" on page 70 should read "Address of Dr. Francisco de P. Miranda of Mexico" instead of address of Dr. Manuel Guevera Oropesa of Mexico.

The proceedings of the Atlantic City Session as printed and amended as indicated were then adopted on motion of Dr. Mather Pfeifferberger, Illinois, seconded by Dr. George W. Kosmak, New York, and carried.

Address of Speaker

The Vice Speaker, Dr. F. F. Borzell, Pennsylvania, presided while the Speaker, Dr. R. W. Fouts, read the following address: *Mr. Speaker, Members of the House of Delegates and Guests:*

Once more it is a distinct privilege and pleasure to preside over the deliberations of this distinguished body. It would appear that we are again faced with a busy session. In addition to the regular business of the House, some important interim committees will render reports. It was hoped that definitive action might be had on some of the proposed revision of the By-Laws, thereby relieving some of the load that will fall on this House at the next annual session.

The Committee to Study Revision of the Constitution and By-Laws was appointed after the session in San Francisco in July 1946. Two sessions of the House have passed and no action has been taken on this matter. The committee has met several times and has given an immense amount of study to the proposition. It would appear that much of its efforts have been directed toward editing and codification rather than making any very drastic changes. The rewriting and rearranging of the subject matter have occasioned some conflicts with the Constitution, and since the committee feels that no attempt should be made to change any of the By-Laws until the complete revision may be made, it would appear that discussion or consideration of any changes would be inadvisable at this time. You have no doubt noted that some rather significant changes are being proposed by the Special Committee to Expedite the Work of the House of Delegates. It is hoped that thorough consideration be given this report and that any action taken will be consistent with the maintenance of proper decorum, and the dignity befitting a legislative body that is without a peer.

It seems advisable to your Speaker to request the appointment of three special reference committees: Executive Session, General Medical Practice, and Medical Service. Is this request granted?

On motion of Dr. E. S. Hamilton, Illinois, seconded by several and carried, the Speaker was granted permission to nominate members for the three additional reference committees which he requested.

Reference Committees

The personnel of all reference committees confirmed by the House on motion of Dr. Walter E. Vest, West Virginia, seconded by Dr. L. J. Kosminsky, Arkansas, and carried, is as follows:

SECTIONS AND SECTION WORK

Walter Phippen, Massachusetts, Chairman.	George A. Unfug, Colorado.
Charles T. Stone, Section on Internal Medicine.	Val H. Fuchs, Louisiana.
	Grover C. Penberthy, Section on Surgery, General and Abdominal.

RULES AND ORDER OF BUSINESS

Thomas K. Lewis, New Jersey, Chairman.	H. Russell Brown, South Dakota.
Harry Aranow, New York.	Morton D. Willcutts, U. S. Navy.
Charles R. Rountree, Oklahoma.	

MEDICAL EDUCATION

Creighton Barker, Connecticut, Chairman.	J. Morrison Hutcheson, Virginia.
A. A. Walker, Alabama.	Alfred T. Gundry, Maryland.
	Robert E. Schluter, Missouri.

LEGISLATION AND PUBLIC RELATIONS

William Bates, Pennsylvania, Chairman.	Karl S. J. Hohlen, Nebraska.
Claude R. Keyport, Michigan.	D. A. Rhinehart, Arkansas.
Allen H. Bunce, Georgia.	

HYGIENE AND PUBLIC HEALTH

William L. Estes, Jr., Pennsylvania, Chairman.	James A. Crabtree, U. S. Public Health Service.
Robertson Ward, California.	W. P. Anderton, New York.
James P. Wall, Mississippi.	

AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

W. R. Coventry, Minnesota, Chairman.	John J. Masterson, New York.
H. B. Woolley, Idaho.	J. D. Hamer, Arizona.
F. J. L. Blasingame, Texas.	

REPORTS OF OFFICERS

Deering G. Smith, New Hampshire.	Clifford C. Sherburne, Ohio.
Warren L. Allee, Missouri.	Benjamin H. Minchew, Georgia.
John W. Green, California.	

REPORTS OF BOARD OF TRUSTEES AND SECRETARY

O. W. H. Mitchell, New York, Chairman.	E. H. Cary, Texas.
H. G. Hamer, Indiana.	Robert H. Hayes, Illinois.
	J. B. Lukens, Kentucky.

CREDENTIALS

G. Henry Mundt, Illinois, Chairman.	Charles F. Strosnider, North Carolina.
Carl A. Lincke, Ohio.	Raymond F. Peterson, Montana.
H. B. Everett, Tennessee.	

MISCELLANEOUS BUSINESS

Edgar P. McNamee, Ohio, Chairman.	L. W. Larson, Section on Pathology and Physiology.
Floyd S. Winslow, New York.	B. R. Kirklin, Section on Radiology.
Homer L. Pearson Jr., Florida.	

EXECUTIVE SESSION

Alfred F. R. Andresen, New York, Chairman.	Fred H. Muller, Illinois.
Stephen E. Gavin, Wisconsin.	James L. Whitehill, Pennsylvania.
Charles E. Mongan, Massachusetts.	George P. Johnston, Wyoming.
Ralph B. Eusden, California.	Hugh P. Smith, South Carolina.

GENERAL MEDICAL PRACTICE

E. V. Askey, California, Chairman.	Wilbur C. Davison, North Carolina.
Howard E. Griffin, Section on General Practice of Medicine.	Philip W. Morgan, Kansas.
Gerald V. Coughlan, Iowa.	Theodore H. Harwood, Vermont.
James Beebe, Delaware.	F. S. Crockett, Indiana.

MEDICAL SERVICE

Edwin S. Hamilton, Illinois, Chairman.	Ralph T. B. Todd, New York.
Raymond L. Zech, Washington.	William Weston, Section on Pediatrics.
C. D. Conklin, District of Columbia.	Edward H. McLean, Oregon.
	Ivan Fawcett, West Virginia.

TELLERS

Joseph F. Londrigan, New Jersey, Chairman.	Thomas A. Foster, Maine.
James P. Kerby, Utah.	William W. Will, Minnesota.

SERGEANTS AT ARMS

J. Stanley Kenney, New York, Chairman.	Wyman D. Barrett, Michigan.
	John A. Fuller, Nevada.

Address of President, Dr. E. L. Bortz

The Speaker resumed the chair and presented Dr. E. L. Bortz, President, who delivered the following address, which was referred to the Reference Committee on Reports of Officers: *Mr. Speaker and Members of the House:*

Since the Centennial Celebration of the American Medical Association in Atlantic City last June, as President of the Association I have had an opportunity to survey a good many of the activities of our organization, to confer with officials and other representatives, and to study in greater detail the work of certain of the Councils and Committees. In addition to this, many of you have extended invitations to me to visit with various state and county societies and other medical organizations. For these generous invitations I am deeply grateful. Please understand that it is physically impossible to accept more than a certain number of speaking engagements and do justice to them. Elevation to the Presidency of this Association, in addition to the high honor which it represents, carries a great responsibility and obligation. In full realization of these facts I have endeavored to interpret, as I saw them, the objectives of the Association and to inform public audiences of the important activities in which our Association is engaged in behalf of a higher level of health for our nation.

Six months ago certain recommendations were made to this House. To the Interim Session of the House of Delegates has been added a scientific program which should be of real value to general practitioners. Medical science is extending its frontiers. Leaders in various fields have collaborated with officials of the American Medical Association in bringing to its membership discussions concerning the etiology, diagnosis and treatment of the common and rare maladies that afflict our fellow men. The Council on Scientific Assembly has drawn up an excellent scientific program for this Interim Session of the House. The American Medical Association is the parent body for the general practitioners, the family physicians of the nation. As such it merits their loyalty and active support. If our Association does not completely meet the needs of the general practitioners, it nevertheless furnishes the best forum for the discussion of their problems, and it has the personnel and experience to meet them from time to time. Participation in the activities of the American Medical Association and the support of its policies are necessary for the welfare of the medical profession as a whole.

Before Cleveland was designated as the meeting place a number of other cities were considered. Even with a smaller attendance at the Interim Session, housing space required for such a large meeting is a serious problem. Rest assured that the officials of the Association are doing their level best to meet this problem from time to time.

Immediately after the House approved the recommendation of closer affiliation of medical students the Board of Trustees took the matter under advisement. Certain alterations in the By-Laws will be necessary. These will be presented to you with the hope that in the not too distant future a plan for student affiliate membership to bring third and fourth year medical students, and perhaps the students of the first and second years also, into the membership will be created. It would be helpful were state and county societies to take up this problem locally where medical schools are established. Consideration will be given for worthy papers by students for inclusion in THE JOURNAL.

PUBLIC RELATIONS

The Board has been carefully studying the various phases of the public relations problem. In many of its activities the public relations aspects of medical practice have represented one of the most important activities over a period of many years. The Bureau of Health Education, the Committee on Rural Medical Service, the Council on Medical Service, the Woman's Auxiliary and other important instruments of the Association have been active in many ways to keep the public informed of medical advances and of the manifold measures which organized medicine is promoting for the public welfare. Public relations in essence is much more than the appointment of a counsel. A certain responsibility devolves on each doctor and employee of the profession to interpret correctly its functions in terms of public benefit.

THE HANDBOOK

The Secretary, Dr. George F. Lull, assigned Dr. Austin Smith and others the work of writing up a modern handbook which was in accord with the recommendations of the House last June. This attractive little volume will be ready for distribution in the near future. I would urge that members of the Association critically read through its pages and then familiarize themselves with the activities of the various departments at headquarters. No one can appreciate the great amount of constructive work which is being carried on by the headquarters' staff in behalf of a higher quality of medical care for the American people. In the three major fields—medical education, health education of the public and research—the staff is blazing new trails and extending medical knowledge to all parts of the country. If the American public were cognizant of the work which the American Medical Association is carrying on in so many various fields there would be fewer discussions of the role which our Association is playing in behalf of a higher quality of medical care.

THE WOMAN'S AUXILIARY

A special credit should be paid to the Woman's Auxiliary. Under the leadership of its charming President, Mrs. Eustace Allen of Georgia, and a corps of excellent committeewomen, the Auxiliary is now beginning to assume its rightful role. It represents probably our most effective instrument in the field of public relations, which, unfortunately, has been the most neglected. As with all of us, the first need for the members of the Auxiliary is to be basically well informed of the issues at stake. All of us should obtain from the various Councils and Officers of the Association the recent factual material which carries controversial issues facing medicine today. One renders our profession a disservice when appearing before a lay group if one is not sufficiently informed. Therefore, the first responsibility is to have a clear conception of our job and how we mean to carry it on.

THE NURSING PROBLEM

Our Committee on Nursing Problems, headed by Dr. Thomas P. Murdock of Connecticut, has quietly but meticulously been carrying on a very careful investigation. The committee has been in contact with representatives of other groups, including nursing organizations, hospital administrators, specialized organizations representing surgeons, pediatricians, radiologists and other groups. One can predict a contribution of value from this active committee.

THE COUNCIL ON NATIONAL EMERGENCY MEDICAL SERVICE

The Council on National Emergency Medical Service has recently become active and has had conferences with several officials of governmental agencies and civilian groups. It is high time that organized medicine and its various subgroups play a larger role in preparing the members of the profession and allied groups for rendering an emergency medical service in time of need. The development of atomic energy as an industrial project immediately forces on the medical profession the necessity of a clear understanding of the hazards which attend proximity to radioactive substances, which are now being elaborated in great quantity. An appreciation of these dangers and an understanding of protection against them and also of management of casualties represent one of the important challenges facing medicine. The Council, in collaboration with the Council on Physical Medicine and that on Industrial Health, hopes to stimulate the interest in this field at all levels and in all sections of the country.

I should like to introduce at this point a statement just received from Dr. Shields Warren, Medical Consultant to the Atomic Energy Commission:

The increasing use of atomic energy and of its outstanding peace time products, the radioactive isotopes, constitutes a challenge to the medical profession. The radioactive isotopes are the most important development in research since the invention of the microscope. They promise to unfold new techniques that will demand the highest degree of scientific imagination and skill for full exploitation. The responsibility of the new fields is clear and pressing.

As in any new field, hazards as well as benefits exist. Potential dangers to investigators, their patients and the general public from the use of radioactive isotopes dictate that the medical profession is also responsible for the prevention and recognition of these dangers.

The unprecedented scale of derangements that would result from an atomic explosion presents a new and vital responsibility to the medical profession. Plans for medical organization to effectively handle these aspects of such explosion should be in existence and such plans should be at a continuing high level of readiness.

The Atomic Energy Commission is desirous that the medical profession shall explore all possible avenues by which the beneficial effect of atomic energy may be used to aid mankind and that the medical profession shall take the necessary measures to protect mankind against radiation and other hazards which may exist in the field of atomic energy.

At a time of international disequilibrium and great social unrest the medical profession is peculiarly vulnerable, since as a whole the doctors of the nation are not prepared, nor are hospitals or nurses, to care for large numbers of casualties if an incident precipitated a major catastrophe in the near future. This is a charge which organized medicine cannot escape. It is an unpleasant responsibility that must be acknowledged and dealt with. Default of leadership on the part of the American Medical Association may result in disaster for the civilian population unless military medical authorities take over. This would result if organized medicine does not accept its responsibility.

MEDICINE ON THE MARCH

While the physician today is a more effective agent in behalf of the health of his patients and in the support of public health measures than at all previous time in the history of our country, an additional responsibility now must be assumed. We must accept leadership for the consideration of various plans that will furnish acceptable medical care to those members of communities who are, for various reasons, at one time or another unable completely to meet the financial demands for such care. No answer is yet available for all the variations of this problem. In the meantime the experimental method should be followed under local and controlled conditions. Pilot studies can be carried on in communities as in laboratories over a span of several years. From time to time an accounting of accomplishments, and a reconsideration of detriments, should aid in the final solution of the problem. Obviously no one plan can be a solution for all portions of the population of our great nation. Flexibility and adjustment to community needs is in order. It should always be kept in mind that compulsion is in order. It should always be kept in mind that compulsion is an odious term, and taxation is not ordinarily interpreted as insurance. In setting up any plan therefore it is important that accurately descriptive terms should be employed by all concerned. As our Congress is in session it is our responsibility to see that the folks back home instruct their representatives concerning the importance of maintaining the democratic approach to the solution of our social problems. Let's be awake to the challenge and find in it a means to a high level of medical service.

PROPOSED NEW HOME

This House approved the suggestion that the Board of Trustees take under advisement a building program. The Board of Trustees has been in communication with an architect. Tentative plans have been discussed. It is hoped that the aesthetic aspect of future construction will not be neglected. Medicine is an art as well as a science. It has a cultural and an aesthetic quality. This should be reflected when possible in its building program. Indifference to the artistic qualities that may be built into a new edifice should be avoided. One can have beauty as well as utility. It is hoped that this phase of the building program will not be entirely overlooked.

A DISTINGUISHED HONOR

On Dec. 16, 1947, the American Pharmaceutical Manufacturers' Association bestowed its Scientific Award on the American Medical Association in recognition of the services which were rendered in behalf of service to the public and medical research. At a brilliant ceremony in New York City the American Pharmaceutical Manufacturers' Association bestowed this award, which was accepted by the President-Elect, Dr. R. L. Sensenich. This honor represents a recognition from one of our great allies in the field of medicine which reflects credit on all members of our organization. The Board of Trustees and other officials were present in person at this ceremony.

1948

Organized medicine enters the new year with great promise. The officials of our organization have its work well in hand. Each council and committee is actively engaged with the increasing responsibilities of the Association. The major objectives of medical education, education of the public, and the furtherance of medical research are being well served. As was stated before, our Association has never played a role of such commanding importance in helping to shape the destinies of the health of the nation as it is doing at the present time. Much has been accomplished, but much more remains to be done. With teamwork and loyalty, and an optimistic attitude, the membership may look forward hopefully to 1948 as one of the big years for organized medicine, and, of even greater importance, through its activities to a more healthful nation.

Presentation of the President-Elect, Dr. R. L. Sensenich

The Speaker presented to the House the President-Elect, Dr. R. L. Sensenich, South Bend, Ind., who spoke as follows: *Mr. Speaker and Members of the House:*

I have so recently been honored by this body, having been selected from the working group, and as I have the greatest respect for the recommendations of your Committee to Expedite Work of the House, it would not be fitting that I take any of your time in discussing some of those things which might be of interest. Some other time perhaps I shall do that.

I am tremendously impressed, after having been a member of the House some years, having served ten years on the Board of Trustees and having had an opportunity to see the picture in its broadest dimensions, with the expanding area, we will say, in which medicine and medical organizations properly should be interested.

At no time in the world's history, as the President pointed out a moment ago, have there been the opportunities for medical leadership, the opportunities to accomplish something for the welfare of the public, that are now offered.

The situation, as it is the world over, has presented so many new problems but, at the same time, so many new opportunities for helpfulness. You are the governing body of the world's largest and most influential medical organization. You have opportunities for a tremendously constructive job, and I am sure that you are capable of doing that. Along with that comes the opportunity for leadership that no medical organization in the world has ever had.

I am sure that your deliberations, your thinking and your planning will be reflected to the tremendous advantage not only of our own people but of those all over the world. Your Chairman of the Board of Trustees will tell you in a little while about some of the things that are being done with the World Medical Association. It might be easy to dismiss that, in a moment by saying, "Well, that is the world. We are interested in America." As it is today, America cannot be entirely neglectful of the things that are happening in other parts of the world. You are now in position to take that leadership and you are being well received. I am sure that that work should continue in a constructive fashion.

Anything that I can do, anything in which my humble efforts may be helpful in carrying out the things which you wish me to do, I shall be very happy to do. Thank you very much.

Report of Board of Trustees

BIOGRAPHY OF DR. ARCHER C. SUDAN, KREMMLING, COLO.

Dr. E. L. Henderson, Chairman, Board of Trustees, read the following short biographic report of Dr. Sudan, adding that in setting up the machinery for this award, it was decided by the Board of Trustees that no past general officer or present member of the House of Delegates would be eligible for this award.

Dr. Archer Chester Sudan, following research and teaching at the University of Chicago in 1926, stopped in Kremmling, Colo., a community of slightly over 500 persons without any physicians or facilities for medical care. Following a year's service to the community, he resigned his position in the University of Chicago and for twenty-one years engaged in the general practice of medicine in Kremmling and in an 80 mile

radius surrounding the village. In 1946 he became president of the Colorado State Medical Society. He has participated in education of the public for better health, and has been member and secretary of the school board.

ASSOCIATION FINANCES

During recent years the Board of Trustees has become seriously concerned over the finances of the Association. The activities have multiplied and the costs of operation have increased tremendously. The Board of Trustees believes, therefore, that a report should be made at this time to the House of Delegates.

For the calendar year that has just closed, there is an indicated loss of approximately \$170,495; even with reductions that have been made in a number of budgets, the budgets for 1948 exceed apparent income by over \$100,000. There are many reasons for this increase in expenditures over previous years. As an example, the Board submits the cost of printing an individual copy of *THE JOURNAL*: In 1939 a *JOURNAL* containing 128 pages cost, for labor, paper, ink, etc., 8.5 cents per copy; in 1947 a *JOURNAL* of the same size cost 12.6 cents per copy, which does not include the cost of mailing and handling after printing.

Not only have wages increased, both in the factory and in the office, but, on account of additional activities of the Association, more employees have been necessary. As an example, on Jan. 1, 1947, 638 persons were in the employ of the Association, while on Aug. 1, 1947, 707 persons were employed. About one third of the employees are working in the printing department, while the other two thirds are employed in the offices of the Association.

A few items may be taken as examples of the increased cost of operation in 1947 over 1946: Paper stock in 1946 cost \$334,610, and in 1947 approximately the same amount and quality of paper cost \$460,000. The cost of electrotypes and engravings increased \$10,000; factory and mailing supplies, \$9,000; ink, \$9,000; second-class postage, \$10,000; other postage, \$10,000; telephone calls and telegrams, \$3,000; power and light, \$2,000; building maintenance, \$10,000.

These items are quoted so that the House of Delegates will have full knowledge of the financial structure. Advertising rates in the Association's periodicals have been substantially increased. It therefore remains for the Association either to find some other method of increasing revenue or to curtail activities.

HOSPITALS AND THE PRACTICE OF MEDICINE

The following report of a committee of the Board is presented:

The practice of medicine by hospitals has been a moot subject for many years. Year after year medical societies, including the American Medical Association, have passed resolutions condemning the system whereby a hospital exploits the services of a physician. This has applied particularly to the four specialties of anesthesiology, pathology, radiology and physical therapy.

The passing of these resolutions has not accomplished a completely satisfactory solution of the problem. A great deal of further study and experimentation must be had to work out a satisfactory solution of this vexing problem.

It would appear that at least we should insist on the following: (1) recognition that the specialties of pathology, radiology, anesthesiology and physical therapy are the practice of medicine; (2) all specialists in a hospital should be under the jurisdiction of the medical board; (3) all specialists should be on the staff of the hospital and be represented on the medical board; (4) conditions of employment will vary locally and they must have the approval of the medical board of the hospital whose responsibility it should be to see that these provisions are carried out; (5) the interests of the general public should be paramount and local conditions must be taken into consideration; (6) there must be cooperative understandings with the hospitals and specialists groups, and (7) it is recommended that the House of Delegates request the Board of Trustees to appoint a committee to study the various resolutions passed previously by the House and that this committee be directed to arrange conferences with the hospital associations and the various specialist societies, in order that a solution may be worked out which will be fair to all parties and redound to the benefit of the public.

It is further recommended that the report of this committee, when prepared, be referred by the Board of Trustees to the Judicial Council for such revision of the Principles of Medical Ethics as may be indicated by the content of that report.

LOUIS H. BAUER, Chairman.
ROY W. FOUTS.
JAMES R. MILLER.

THE WORLD MEDICAL ASSOCIATION

Four representatives of the American Medical Association attended the organization of the World Medical Association in Paris in September. Dr. E. L. Henderson and Dr. L. H. Bauer attended as delegates, and Dr. E. E. Irons and Dr. R. L. Sen-senich as alternate delegates.

Forty-eight nations were represented, covering the greater part of the world.

The aims of the Association as defined in its Constitution are: (1) to promote closer ties among the national medical organizations and among the doctors of the world by personal contact and all other means possible; (2) to maintain the honor and protect the interests of the medical profession; (3) to study and report on the professional problems which confront the medical profession in the different countries; (4) to organize an exchange of information on matters of interest to the medical profession; (5) to establish relations with and to present the views of the medical profession to the World Health Organization, U. N. E. S. C. O., and other appropriate bodies; (6) to assist all peoples of the world to attain the highest possible level of health, and (7) to promote world peace.

The Association is organized into a General Assembly, consisting of two delegates from each national medical association and a General Council, consisting of the President, the President-Elect, the Treasurer and ten elective members. The President is to come from the country in which the General Assembly meets.

The President is from France, the President-Elect from Czecho-Slovakia, the Treasurer from Switzerland and the members of the Council from England, Sweden, France, Spain, Austria, India, China, Cuba, Canada and the United States.

As it was evident that the income from dues would be insufficient to make the organization effective, your delegates offered to provide \$50,000 a year for five years, to be raised by voluntary subscription from industry, medical organizations and individual physicians, in order to put the Association on its feet. This money is to be spent under the auspices of a supporting United States committee. There were certain provisions which had to be agreed to by the Association before the money would be available. These provisos were accepted. The important one was that the headquarters and general secretariat would have to be located in North America. It has since been decided that the headquarters will be in New York City.

The temporary Secretary is Dr. Charles Hill of Great Britain. The permanent Secretary is yet to be selected. There are to be three assistant secretaries, one English speaking, one French speaking, and one Spanish speaking, as these three languages are the official ones of the Association.

The Association is to publish a *Bulletin* at stated intervals. Two surveys are already under way, one concerning the status of the physician and medical practice in all countries, and the other concerning medical education and licensing in all countries.

The Association condemned medical war crimes, urged the adoption of an oath to be taken by all prospective physicians forewarning such practices and decided not to admit the German Medical Syndicate to membership until it had repudiated the war crimes committed by its members, had expelled them and had given assurance that such crimes would not occur in the future.

Many of the countries need help and many do not have strong medical associations. We aim to assist them to help themselves.

This new Association, born on September 18, 1947, has great potentialities. If the doctors of the world cannot get together, it is doubtful if anyone can. It may well be that this organization will prove to be the first step toward a better understanding among nations, and if so it will be well worth while.

The Speaker referred the report to the Reference Committee on Reports of Board of Trustees and Secretary, except the

portion of the report dealing with hospitals and the practice of medicine, which was referred to the Reference Committee on Miscellaneous Topics, and except the portion of the report dealing with the World Medical Association, which was referred to the Reference Committee on Legislation and Public Relations.

SUPPLEMENT TO REPORT OF BOARD OF TRUSTEES RESOLUTION REQUESTING AMENDMENT TO BY-LAWS TO INCREASE FELLOWSHIP DUES

Dr. Allen H. Bunce, Georgia, presented the following resolution as a supplement to the report of the Board of Trustees, which was referred to the Reference Committee on Reports of Board of Trustees and Secretary:

WHEREAS, The Board of Trustees has presented to the House of Delegates information concerning the income and expenditures of the American Medical Association leading to the belief that an increase in income is necessary if the Association is to carry out the many responsibilities placed on it by the House of Delegates; and

WHEREAS, The American Medical Association has within recent years expanded greatly its activities by the establishment of councils, committees and bureaus and departments charged with new functions; and

WHEREAS, The chief income of the American Medical Association derives from the subscriptions to its various publications, including chiefly *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, and

WHEREAS, Chapter 18 of the By-Laws of the American Medical Association was last amended in 1929 so that it reads: "The annual Fellowship dues and the subscription price of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* shall be fixed by the Board of Trustees, and the same shall be payable in advance, on the first day of January of each year, provided that the annual dues shall not exceed \$8, and provided that the amount of the same shall be announced in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* not later than November 1 of each year"; therefore be it

Resolved, That this House of Delegates amend Chapter 18, "Annual Fellowship Dues," to read: Except with respect to the year 1948, the annual Fellowship dues and the subscription price of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* shall be fixed by the Board of Trustees and the same shall be payable in advance on the first day of January in each year provided that the annual dues shall not exceed \$12, and provided that the amount of the same shall be announced in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* not later than November 1 of each year. For the year 1948 such dues and subscription price of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* shall be \$12 and shall be payable in advance not later than April 1 of that year, provided that a notice of the said dues and subscription price of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* set by the adoption of this amendment is given each Fellow prior to April 1, either in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* or by mail as circumstances may indicate.

Motion Commending Delegates to World Medical Association

It was moved by Dr. John W. Cline, California, seconded by Dr. George W. Kosmak, New York, and carried, that the delegates representing the American Medical Association at the World Medical Association be commended for their wisdom, initiative and foresight in furthering this objective.

Report of Committee to Expedite Work of House of Delegates

Dr. James R. Reuling, New York, presented the Report of the Committee to Expedite the Work of the House of Delegates as published in the program, which was referred to the Reference Committee on Rules and Order of Business.

Report of Committee on Nursing Problems

Dr. Thomas P. Murdock, Chairman, presented the following report, which was referred to the Reference Committee on Medical Education:

Mr. Speaker and Gentlemen of the House of Delegates:

At the annual session in Atlantic City in June 1947 Dr. E. L. Bortz in his presidential address to the House of Delegates recommended the appointment of a committee to study the nursing problem. The recommendation was approved by the reference committee and by the House of Delegates. In due time it was cleared by the Board of Trustees, and the President appointed the committee in July 1947.

The members of the original committee were Dr. Lester Dragstedt, Brigadier General Warren Draper, Dr. Wingate Johnson, Dr. Donald Smelzer and Dr. T. P. Murdock. Dr. Dragstedt refused appointment and Dr. Wingate Johnson resigned after election to the Board of Trustees. Dr. Howard K. Gray was appointed to replace Dr. Dragstedt and Dr. W. P. Parsons to replace Dr. Johnson.

The committee held its first meeting in New York on Sept. 3, 1947. At this meeting the committee organized and reviewed exhaustively all of the correspondence and available literature, including the results of the poll of the American Surgical Association and the reports of studies of the American College of Surgeons.

On Oct. 16, 1947 a subcommittee met in New York City with representatives of the various nurses organizations. On October 17, 1947 the committee met in Chicago with representatives of the American Hospital Association and the American College of Surgeons.

On November 21 and 22, 1947 the committee met at the headquarters of the American Medical Association with representatives of the nursing organizations, the American College of Surgeons and the American Hospital Association.

The study is being conducted along three lines: (1) immediate relief; (2) the future training courses to be recommended for various grades of nurses; (3) the economic conditions.

Regarding the first, attempts are being made to bring out of retirement as many nurses as possible, to fit immediately into the picture as many practical nurses as possible, to train on the job attendants and to try to see to it that work now improperly assigned to nurses will be done by others.

Regarding the second, editorials are to appear or have appeared in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, *Hygia* and every state and county journal in the United States stimulating the doctors to aid in recruitment of student nurses. Radio plays are being prepared by Dr. W. W. Bauer to stimulate young ladies to enter the nursing profession. The study is going forward to plan a grade of nurse, below the present day professional nurse, to do bedside nursing under the supervision of the professional nurse. This phase has not been completed but there is general agreement of all groups that this can be accomplished. There is also the hope that uniform standards of training can be established for this group.

Covering the third or economic phase, studies are being pursued to include nurses under the social security act. Retirement plans for nurses are being investigated. The question of attempting to tie in the cost of nursing with prepayment voluntary hospital and medical care plans and with old line insurance companies is being investigated. With this last phase the committee somewhat pessimistic as to its possibilities due to excessive costs.

The committee expresses its thanks to the President, Dr. E. L. Bortz, the Board of Trustees, Dr. George F. Lull, Dr. Morris Fishbein and the headquarters staff for their help. The representatives of the American College of Surgeons have been most helpful. The committee at all times has had the generous cooperation of the representatives of the American Hospital Association, particularly Mr. George Bugbee and Dr. Hugo Hullerman.

The committee is pleased to report the very great aid given by the representatives of the nursing organizations. It feels that they are contributing a great deal to the study, are anxious to have the problem solved and have very intimate knowledge of the difficulties of the situation. Their willingness to aid, their tolerance and suggestions have been a source of comfort to the committee.

At this point your committee wishes to bring out a suggestion originating with the American Hospital Association. This is for a continuing conference committee to be made up of representatives of the American Hospital Association, the American Nurses Association and the American Medical Association. The purpose of this committee is to study problems that are common to all. Your committee recommends that a committee of five be appointed for this purpose.

Mr. Speaker, this must of necessity be considered only as a report of progress excepting that part having to do with the appointment of a permanent conference committee, which it is hoped will be acted on at this session.

Respectfully submitted,
T. P. MURDOCK, Chairman.
WARREN DRAPER.
HOWARD K. GRAY.
W. P. PARSONS.
DONALD SMELZER.

Report of Committee on Rural Medical Service

Dr. F. S. Crockett, Chairman, presented a handbook of reports of activities during the past year of forty-five of the forty-eight states where the state medical committee on rural medical service has carried on its activities, a copy of which was distributed to each delegate and served as a report of the committee. This was referred to the Reference Committee on Medical Service.

Report of Council on Scientific Assembly

Dr. Henry R. Viets, Chairman, presented the following report, and the portion of the report dealing with the Section on Diseases of the Chest was referred to the Reference Committee on Amendments to the Constitution and By-Laws:

To the Members of the House of Delegates of the American Medical Association:

The Council on Scientific Assembly has met three times since the 1947 Annual Session in Atlantic City, once on September 4 and again on October 18, both meetings being held in Chicago, and a third meeting in Cleveland on Jan. 4, 1948.

The Council offers the Scientific Program for the Cleveland Interim Session as part of its report.

SECTION ON DISEASES OF THE CHEST

The House of Delegates at the 1947 Atlantic City Session, on the last day of the meeting, approved the establishment of a new Section on Diseases of the Chest. The By-Laws were not changed at this meeting because action could not be taken at that time; a proposed amendment, needed to create a new Section, must lie over for twenty-four hours. Because the Section on Diseases of the Chest could not function as a Section in 1948, the Council on Scientific Assembly voted to devote one session in the Section on Miscellaneous Topics at the 1948 Annual Session in Chicago to a program on Diseases of the Chest.

The approval of this new Section by the House did not conform to the procedure set forth in the By-Laws, although the House had the right to create the section under the Constitution of the American Medical Association.

The Council is disturbed by the procedure adopted by the House in creating the new Section on Diseases of the Chest before the Council had given full consideration to the application and had made its report to the House. The Council is charged in the By-Laws not only with setting up the scientific programs but "to consider at first hand applications for new sections, or for changes in existing sections, and report to the House of Delegates." From the point of view of the Council, therefore, the action by the House in 1947 in establishing a section without the Council's considering "at first hand" the application, disturbs the efficient functioning of the organization of the American Medical Association, particularly as applications for other sections were pending at that time and were being given orderly recognition by the method established by the By-Laws.

SECTION ON MISCELLANEOUS TOPICS

The Council also voted to grant a session on Allergy and one on the History of Medicine in the Section on Miscellaneous Topics at the 1948 Annual Session, in addition to a Session on Diseases of the Chest. A chairman and secretary for each session was appointed by the Council as provided for by the By-Laws.

A request for a session on Legal Medicine in the Section on Miscellaneous Topics was received. The request could not be granted in view of the fact that the three sessions had already been assigned by the Council on Scientific Assembly. Dr. Moritz was urged to offer a group of papers on Legal Medicine to the Council for consideration in the program of the General Scientific Meetings at the 1948 Annual Session and was asked to give consideration to the presentation of papers of a similar nature before the Section on the General Practice of Medicine or before the Section on Preventive and Industrial Medicine and Public Health or the Section on Pathology and Physiology or at a joint meeting of two sections.

ANNUAL CONFERENCE OF SECTION SECRETARIES

The Annual Conference of Section Secretaries with the Council on Scientific Assembly was held on Oct. 18, 1947, and preparations were made for the usual scheduled section meetings for the 1948 Annual Session.

CENTENNIAL CELEBRATIONS OF SECTIONS

The Council took cognizance of the resolution adopted by the House of Delegates at the 1947 Atlantic City Session on sections celebrating their centennials. As the first centennial will not occur for ten years, no definite action was taken by the Council at this time.

PHYSICAL MEDICINE

An application by a representative group of physicians was presented to the Council for the establishment of a Section on Physical Medicine in the American Medical Association. After due consideration it was voted to defer action on this application.

SECTION REORGANIZATION

The Council continued its studies on section reorganization and voted to request the House of Delegates for permission to have a joint meeting with the Committee to Study Revision of Constitution and By-Laws, to consider in particular the functions of the Scientific Assembly.

Respectfully submitted,

HENRY R. VIETS, Chairman.	
CHARLES H. PHIFER.	
LEONARD W. LARSON.	
STANLEY P. REIMANN.	
LUKE B. JACKSON.	
R. L. SENSENICH, President-Elect.	} ex officio
MORRIS FISHBURN,	
GEORGE F. LULL, Secretary.	

Report of Council on Medical Service

Dr. James R. McVay, Chairman, presented the following Report of the Council on Medical Service, which was referred to the Reference Committee on Medical Service:

Community leadership in health problems by county medical societies and state medical associations will be the goal of the Council on Medical Service for 1948.

Since the June Session of the House of Delegates the Council on Medical Service has carried on its regular activities and has begun study on various matters referred to it by the House. In addition, the Council has found it advisable to look back on its original functions and appraise some of the Council's objectives and the methods used to reach those objectives. At this time the Council will report progress with reference to particular activities and studies. The Council will submit a complete report at the regular annual session of the House of Delegates in June 1948.

PROFESSIONAL RELATIONSHIPS

The task of informing the medical profession of activities and trends in the broad field of medical care is, in itself, of sufficient importance and magnitude to require much of the time and energies of the Council and its staff. The Council feels it has broken the ground, or paved the way, to a better understanding between the constituent associations and component societies and the American Medical Association, and that through this better understanding much good will come.

REGIONAL CONFERENCES

The sixteen regional conferences which the Council has sponsored during the past four years have provided a medium for exchange of information and of ideas. In the past few months the Council either sponsored or participated in five conferences—in Atlanta, in New Orleans, in Philadelphia, in St. Paul and in Cleveland. Several different types of conferences are being tried. In Atlanta, representatives of important lay groups were given prominence in the one day program; in New Orleans, the conference was increased to two days with each of the four half days devoted to a round table discussion of a particular subject suggested by the participating states, and in Cleveland emphasis

was placed on the services which the American Medical Association is prepared to render to medical societies and to member physicians. Conferences have been arranged for this spring in the Northwest and in the Rocky Mountain areas.

It has been evident to the Council that different types of conferences are effective in different areas. We propose to continue experimenting with various approaches in our regional conferences and ultimately hope to arrive at several workable methods for exchanging information and ideas and for translating these into action which will improve medical services to the American people.

THE NEWS LETTER

The News Letter of the Council continues to be a source of information to over 3,500 physicians. The distribution has been limited to this figure only because funds are lacking to supply it to all who would like to be on the mailing list.

The News Letter reports on many activities in as brief a manner as is possible. This type of reporting is essential to continued readership, and the regular monthly letters will retain this style.

At the same time the Council believes that there are many programs and trends in medical service that need reporting in complete detail. Several special News Letters have been issued to meet this need. An example is the letter devoted to Cancer Control Programs.

The Council is considering also a quarterly publication on socio-economic matters. Details of many medical service programs carried on by medical societies could be presented in such a publication. An example of a problem needing detailed treatment is indigent medical care. The quarterly publication could show how this problem is approached in cities or counties where successful programs are in operation. Details on many phases of medical service in which medical societies have been successful would make excellent reference material for other medical societies and would provide a vast amount of data in support of the Ten Point National Health Program of the American Medical Association.

V. A. HOME TOWN MEDICAL CARE CONFERENCE

The House of Delegates at its June session authorized the Council to sponsor a conference of state medical association representatives to discuss the Veterans Administration Home Town Medical Care Program. The conference, held November 6, was attended by General Paul Hawley, Colonel John C. Harding, ninety-nine representatives from forty-three states and some forty others representing prepayment plans and special groups. This conference was successful. The representatives present selected six of their number to meet with the Trustees' Veterans Committee following the general conference. At this meeting ways and means of ironing out future policies were discussed. A full report of the conference was prepared and sent to each state medical society representative. Undoubtedly further report on the veteran care activities will be made by the Board of Trustees.

STUDY OF COUNTY SOCIETIES' ACTIVITIES

Special effort has been made in recent months to build up contacts with the county medical societies. Many county medical society officers receive the News Letter and attend the regional conferences. However, it has been evident that a closer contact is necessary if the Council is to report accurately on progress in the field of medical service. Many medical care programs originate and are carried out at the county level. Some examples are: cancer detection clinics, indigent medical care plans, tuberculosis case-finding programs and health councils. To evaluate these and other medical care programs, regular contact with county medical societies is necessary. The Council is carrying on a study of the activities in more than two hundred county medical societies. The purpose of this study is to create information files here in the Association offices so that the information will be available to the many county medical societies that have not, in the past, carried on activities or sponsored programs. Anyone who regularly reads the county medical society publications, more than one hundred in number, realizes that the medical profession is doing much in the support of

voluntary medical service programs that is never recognized beyond the county border. Localizing or decentralizing medical service programs is a part of the Association's policy; yet little seems to have been accumulated concerning the actual extent and progress of such decentralizing activities. The results of the Council's study should be helpful in showing what voluntary effort is accomplishing; it will aid in stimulating future effort in medical care programs where such effort has lagged, and it will enable the American Medical Association to give recognition to state and county medical societies which have successfully attacked medical care problems.

SPECIAL PROJECTS

Cash Sickness Benefits.—The Council continues to follow legislative developments in the various states and has made it a point to maintain a liaison with the Railroad Retirement Board in regard to cash sickness benefits. At the time of the June session the Council reported on the introduction of thirty-two "cash sickness" bills in the legislatures of thirteen states. Since then eleven bills have been added, making a total of some forty-three bills introduced in sixteen state legislatures. These bills generally provide for the establishment of a system of sickness benefits or "health insurance." The growth in interest in this type of legislation is shown by the fact that only ten bills were introduced in state legislatures in 1935-1936, as compared to thirty-nine in 1945 and forty-three in 1947.

Health Councils.—In October the Council released its first publication on the subject of health councils. The brochure, entitled "Medical Care Prepayment Plan Development Through a Local Health Council," was designed to stimulate interest in health councils among physicians in towns of less than 10,000 population. It stimulated far more interest than had been anticipated, and the first run of 5,000 vanished quickly. A second brochure now ready for publication is entitled "The Community Health Council." Further brochures will enter into discussions of the urban (city) and the state health councils.

Group Practice Study.—On the suggestion of the Board of Trustees the Council has appointed a Group Practice Committee to act in an advisory capacity to the Bureau of Medical Economic Research in the Group Practice Study.

Study of Cooperatives.—The study of consumer-sponsored and cooperative health service plans has identified seventy-nine such plans. Contrary to popular opinion the plans are operating in both urban and rural areas. In the forty-eight plans reporting enrollment a total of 36 per cent came from rural communities and the remaining 64 per cent came from urban areas. The total enrollment of the forty-eight plans was 674,653. The Council is continuing with the study of medical cooperatives and plans to publish a brochure on the subject this coming spring.

PREPAYMENT

The Council is continuing its active interest in the various voluntary prepayment medical care plans. Seven new plans, or programs, in as many states were completed in 1947. Thirty-eight states now have programs in operation. In several states the plans are fairly complete and should soon be in operation.

The medical society approved plans added more than 2,000,000 subscribers during the first nine months of 1947 to bring total enrollment to over 6,500,000. Enrollment in the so-called non-profit plans is at its best in Delaware, where 41.77 per cent of the population has "joined up." Other top percentages enrolled are: 26.21 in New Hampshire; 17.75 in Colorado; 17.48 in Washington, and 14.61 in Michigan.

Prepayment plans are rapidly extending into rural areas with thirty-seven reporting rural enrollment programs in operation. The plans are also broadening their coverages and are extending enrollment privileges to smaller groups and in some instances to individuals.

Recent estimates of the number of persons covered under the several types of voluntary prepayment plans are: industrial, consumer sponsored, government and university programs, 3,302,000; insurance companies (accident and health and hospital and surgical), 44,000,000; Blue Cross Hospitalization, 28,000,000, and medical society-sponsored medical care plans, 6,500,000.

Although not additive these figures total over 82,000,000. There are duplications, as some persons are covered under more than one type of prepayment program.

Current surveys are in process which are designed to produce the latest available enrollment data and make adequate allowances for duplication of coverage.

RELATIONS WITH OUTSIDE AGENCIES

In almost every medical service activity it is necessary for the medical profession to work with other groups, organizations and agencies. Recognizing this, the Council has furthered its contacts with many national agencies and organizations.

Cooperation has been developed with such groups as the American Cancer Society, the National Federation of Small Business, Inc., the United States Chamber of Commerce, the American Hospital Association, and the American Dental Association. One of the better examples of cooperation is the Joint Committee for the Chronically Ill made up of representatives of the American Medical Association, the American Public Health Association, the American Hospital Association, and the American Public Welfare Association. This Committee met recently in New York and laid careful plans for the study of chronic disease.

Respectfully submitted,

JAMES R. McVAY, Chairman.
A. W. ADSON.
WALTER B. MARTIN.
THOMAS A. MCGOLDRICK.
J. D. HAMER.
ELMER HESS.
H. H. SHOULDER.
EDWARD L. BORTZ.
E. J. MCCORMICK.
GEORGE F. LULL.

The House recessed at 12:50 p.m., to reconvene at 2:30 p.m.

Monday Afternoon

The House reconvened at 2:45 p.m., with the Speaker, Dr. R. W. Fouts, presiding.

NEW BUSINESS

Resolution Requesting Amendment to By-Laws to Increase Fellowship Dues

Dr. Allen H. Bunce, Georgia, reintroduced the resolution dealing with an amendment to the By-Laws whereby the Fellowship dues would be increased, and the Speaker referred the resolution to the Reference Committee on Amendments to the Constitution and By-Laws.

Resolution on Intern and Resident Training

Dr. Hilton S. Reed, New Jersey, introduced the following resolution, which was referred to the Reference Committee on Medical Education:

WHEREAS, Medical students are by virtue of training requirement and organizational setup required to blueprint their program of training in their late junior or early senior year; and

WHEREAS, It is becoming increasingly difficult for American Medical Association approved hospitals other than those associated with teaching institutions to secure interns and residents; therefore be it

Resolved, That a committee of this House, including two general practitioners, be appointed to study (a) the potentialities of requiring, in the interest of promoting general practice, a year of rotating internship before permitting a candidate to elect specialty training, and (b) the supply and techniques of distribution of interns and residents and report to this House at the June session.

Resolution on Proper Integration of Training of Nurses

Dr. J. Morrison Hutcheson, for the Medical Society of Virginia, presented the following resolution, which was referred to the Reference Committee on Medical Service:

WHEREAS, Competent nursing is an integral part of medical practice and a proper concern of physicians and medical organizations; and

WHEREAS, The increasing shortage of nurses during recent years has now reached alarming proportions and seriously handicaps medical care; and

WHEREAS, At several sessions of the House of Delegates of the American Medical Association committees have been appointed to look into the manner, and at the last session in June 1947 a committee of five to be appointed by the president was authorized to study all aspects of the question; and

WHEREAS, The current system of training nurses is a principal cause of this shortage and no relief may be expected until it is revised; and

WHEREAS, The curriculum which has been evolved during the past few decades and which is in operation at present has failed to produce better nurses, as more and more time has been devoted to the study of supposedly ancillary subjects with the consequent neglect of training in the practical art of caring for the sick, with the result that the present day graduate is not so well prepared to meet the patient's needs as were her sisters of a generation ago; and

WHEREAS, The present trend toward the formation of a new group of practical nurses is a significant development illustrating the need and demand for more effective nursing service; therefore be it

Resolved, By the house of delegates of the Medical Society of Virginia in session on Oct. 14, 1947, at Roanoke, Virginia, that a proper integration of the training of the two groups of nurses should be effected in such a way as to best serve the purpose of good medicine, the welfare of the patient, the continued development of the nursing profession, and provide an adequate number of nurses trained in the art and practice of bedside nursing and that this resolution be presented to the House of Delegates of the American Medical Association, and copies sent to the Special Committee on Nursing of the American Medical Association, the Nurses Association of Virginia, and the National Nurses Association.

Resolutions on Distribution of Interns

Dr. Edgar P. McNamee, Ohio, presented the following resolutions, which were referred to the Reference Committee on Medical Education:

WHEREAS, The number of positions for intern medical training in approved hospitals exceeds by a large number the available interns; and

WHEREAS, It is becoming increasingly more difficult each year for approved hospitals and those hospitals desiring approval to secure interns from class A schools; and

WHEREAS, Approved hospitals that provide excellent opportunities for interns and residents to gain practical experience in a considerable amount under qualified physicians and surgeons are finding it exceedingly difficult to compete with the medical teaching institutions and large medical centers; and

WHEREAS, An agreement for internship placement was formulated by the Association of American Medical Colleges and agreed to by the Council on Medical Education and Hospitals of the American Medical Association, and the American, Protestant, and Catholic hospital associations; therefore be it

Resolved, That the House of Delegates of the American Medical Association be requested to take such action as will result in the rigid adherence by all hospitals to the plan for internship placement; and be it further

Resolved, That the House of Delegates of the American Medical Association instruct the Council on Medical Education and Hospitals to study this problem of unequal distribution of interns and formulate a plan in cooperation with the Association of American Medical Colleges, the American Hospital Association, the Catholic Hospital Association and the Protestant Hospital Association limiting the number of interns per hospital or institution on the basis of bed capacity further to insure an equitable distribution of interns.

Resolution on Fixing Date of Interim Session

Dr. Karl S. J. Hohlen, Nebraska, presented the following resolution, which was referred to the Reference Committee on Rules and Order of Business:

WHEREAS, There is a resolution now pending before the House that the delegates to the American Medical Association take office January 1 next following their election; and

WHEREAS, Unless a definite date be fixed for the interim session of the House of Delegates, complications will arise affecting the number of sessions which a delegate may attend during his term of office; therefore be it

Resolved, That the interim session of the House of Delegates of the American Medical Association be held in the month of December, the exact date to be fixed by the Board of Trustees.

Resolution on Endorsement of National Multiple Sclerosis Society

Dr. Hans H. F. Reese, Section on Nervous and Mental Diseases, presented the following resolution, which was referred to the Reference Committee on Medical Education:

WHEREAS, Multiple sclerosis is a condition of increasing concern to the medical profession; and

WHEREAS, There are many involved problems related to its etiologies and treatment schedules; and

WHEREAS, A new organization with a qualified medical advisory board has been formed to devote itself particularly to the solution of such problems; therefore be it

Resolved, That the American Medical Association endorse officially the attempt to educate the public concerning the disease and to undertake investigations leading to a solution of its problems in qualified hospital and medical centers.

Resolutions on Disapproval of Principles of Grants-in-Aid to All States Regardless of Established Actual Need

Dr. T. K. Lewis, New Jersey, presented the following resolutions, which were referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, Title VII of Senate Bill No. 545, now pending in the 80th Congress, implicitly premises the assumption that all states, in varying degree, need financial assistance from the federal government to carry out the purposes of this Title; and

WHEREAS, The platform of the American Medical Association, adopted by the House of Delegates of the American Medical Association, June 13, 1944, advocates (Section D) "The allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick on proof of such need"; and

WHEREAS, The philosophy of grants-in-aid to the states without demonstrated actual need, as contemplated in Title VII of S. 545, contravenes the basic principles of the platform of the American Medical Association as to "the allotment of such funds"; therefore be it

Resolved, That the House of Delegates of the American Medical Association, while in accord with the objectives of Title VII of S. 545, "Improved medical care services and hospital care for families and individuals with low income," registers its disapproval of the principles of grants-in-aid to all states regardless of established actual need, expressed in Title VII, in the conviction that the majority of states do not need federal financial assistance to carry out the purposes of this Title; and be it further

Resolved, That copies of this resolution be forwarded to the sponsors of S. 545, to the other members of the Senate and to the members of the House of Representatives.

Resolutions on Approval of Training of Residents and Interns

Dr. James P. Kerby, Utah, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The practice of radiology, pathology and anesthesiology is recognized by the American Medical Association as the practice of medicine; and

WHEREAS, Leading hospital organizations of the United States have recognized this fact; and

WHEREAS, There is a tendency on the part of certain hospital administrators to utilize the profits resulting from the operation of these departments in their institutions; and

WHEREAS, This constitutes exploitation of professional medical services; and

WHEREAS, This is contrary to medical ethics; therefore be it

Resolved, That it is the sense of the Council that this practice should be condemned; and be it further

Resolved, That the Council of the Utah State Medical Association urge the House of Delegates of the American Medical Association to instruct the Board of Trustees of the American Medical Association to direct the Council on Medical Education and Hospitals to refuse approval for training of residents and interns of any hospital exploiting professional medical services.

Resolutions on Limitation of Tenure of Office of Delegates

Dr. William H. Halley, Colorado, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, There is increasing concern in a number of constituent associations because of inadequate participation in the affairs of the American Medical Association by younger members of the profession; and

WHEREAS, Many constituent associations are endeavoring to stimulate the active interest of younger members to meet the challenge of rapidly changing socio-economic factors; and

WHEREAS, President Bortz has recognized the wisdom of indoctrinating younger members in the problems of organized medicine; and

WHEREAS, It is an established principle that a legislative body is the final judge of the qualifications of its members; now, therefore, be it

Resolved, That to encourage the participation of younger physicians in the policy-making bodies of the American Medical Association, the principle of limitation of tenure of office already applicable to many offices of the Association be extended to include the members of the House of Delegates of the American Medical Association; and be it further

Resolved, That the Committee to Study the Revision of the Constitution and By-Laws be instructed to prepare suitable amendments to make this policy effective.

Resolutions on Geographic Selection of Trustees of American Medical Association

Dr. William E. Halley, Colorado, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The complex problems of the practice of medicine are complicated by geographical differences; and

WHEREAS, Physicians are more conversant with conditions in their respective regions than are those resident in other areas; now, therefore, be it

Resolved, That in order to insure geographic representation on the Board of Trustees for consideration of problems arising in all districts of the United States, each member of the Board of Trustees of the American Medical Association shall be selected from a different geographic area; and be it further

Resolved, That the Committee to Study Revision of the Constitution and By-Laws be directed to prepare suitable amendments to make this policy effective.

Resolutions on Regulation of the Practice of Pathology by Registered and Approved Hospitals

Dr. A. S. Giordano, Indiana, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The House of Delegates has adopted the Vest resolution designed to curb the encroachments of hospitals and institutions on the practice of medicine; and

WHEREAS, The hospitals frequently consider the pathology department as a source of income for the hospital; and

WHEREAS, The practice of pathology has been repeatedly defined by the House of Delegates as the practice of medicine; and

WHEREAS, The American Medical Association's "essentials of a registered hospital" specifically state that the radiology department should not be operated for a profit; therefore be it

Resolved, That the American Medical Association's "essentials of a registered hospital" be amended to include the statement that the pathology department should not be operated for a profit; and be it further

Resolved, That this same principle shall be included in the interpretation of the essentials for an approved internship and the essentials for an approved residency.

Resolution on Propaganda Distributed to the Armed Forces

Dr. Herbert H. Bauckus, New York, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, I hold in my hand a copy of "Is Your Health the Nation's Business?" issued by the War Department for use of personnel of the Army, Navy, Marine Corps and Coast Guard, which while it purports to present impartially both sides of the arguments for and against government-controlled sickness insurance for use in round table discussions by personnel of the armed forces, actually quotes at length without their true identity and propaganda purposes being revealed the platform of the American Public Health Association and health conference report; and

WHEREAS, The arguments against government control are presented weakly and inconclusively, containing the usual disclaimer that "It is not to be inferred that the War Department endorses any one of the particular views presented" and "distribution of this pamphlet is not to be construed as an endorsement by the Navy Department of the statements contained therein"; and

WHEREAS, The effect would be to regard the pamphlet as the official position of the government; therefore be it

Resolved, That the House of Delegates of the American Medical Association call to the attention of the Board of Trustees the pamphlet "Is Your Health the Nation's Business?" prepared for the use of the United States Armed Forces by the American Historical Association, with the request that it be referred to the appropriate Council for action, such action to include the lodging with the proper government official of a protest against the issuance of such propaganda to members of the armed forces.

Resolutions on Red Cross Blood Program

Dr. Robertson Ward, California, presented the following resolutions, which were referred to the Reference Committee on Medical Service:

WHEREAS, The procurement and distribution of human blood in time of peace is a matter for joint cooperation between the medical profession and the appropriate private or commercial laboratories; and

WHEREAS, Many medical associations have already set up and are successfully conducting nonprofit blood banks; therefore be it

Resolved, That this House of Delegates does not regard it as a proper function of the American Red Cross to engage in a blood bank program in the United States in time of peace; and be it further

Resolved, That this resolution rescinds the former "Approval in Principle" granted to the so called Red Cross Blood Program by this House.

Resolution on Diagnosis of Tuberculosis

Dr. Burt R. Shurly, Se on on Laryngology, Otolaryngology and Rhinology, presented the following resolution, which was referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, Case finding with x-rays of the chest has produced great results in the early diagnosis of pulmonary tuberculosis; and

WHEREAS, The more extensive use of these methods will do much toward the elimination of contagion and the prevention of this disease; therefore be it

Resolved, That the American Medical Association be requested to give extra efforts in the publication of these methods and that these methods be afforded to all school children and teachers throughout this country.

Resolutions on Examination of Immigrants

Dr. John W. Cline, California, presented the following resolutions, which were referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, As a result of world conditions, disease, including tuberculosis and other communicable diseases, is widespread in many portions of the world; and

WHEREAS, Persons living in these places are seeking admission to this country as immigrants; and

WHEREAS, Admission of persons having such diseases constitutes a public health hazard, most particularly so in coastal states where the U. S. Immigration Service maintains ports of entry; therefore be it

Resolved, That the American Medical Association call this situation to the attention of the Congress, the United States Public Health Service, and the proper immigration authorities; and be it further

Resolved, That these agencies of government be requested to require adequate and reliable physical examination, including x-ray examination of the chest, prior to and as a condition of admission to this country; and be it further

Resolved, That if such examination cannot be secured prior to leaving the country of origin the immigrant seeking admission be so examined at the proposed port of entry.

Tribute to Dr. Archer C. Sudan

Dr. William H. Halley, Colorado, presented the following statement concerning the election of Dr. Archer C. Sudan, Kremmling, Colo., to receive the General Practitioner's Award: *Mr. Speaker and Members of the House:*

This is a proud hour in the history of the Colorado State Medical Society. On behalf of my colleagues, of the whole Society, I take this opportunity to thank you for the great honor you have paid to Dr. Sudan and to the general practice of medicine in the wide open spaces of the Rocky Mountain west.

Our spaces are wide, and as those of you who have seen the Rocky Mountains know, our miles are sometimes vertical as well as horizontal. They are big miles. Doctor Sudan is a big man, as all of you will know if you can meet him Wednesday evening.

It does not diminish our appreciation one whit to say that we in the Rocky Mountain region believe that you chose well when you chose Dr. Sudan for the General Practitioner's Award. We thank you, beyond our ability to put it into words.

Invitation from New York

Dr. James R. Reuling, New York, presented the following invitation, which was referred to the Board of Trustees for its information:

1949 INTERIM SESSION

The Council of the Medical Society of the State of New York has received and approved a letter received under date of December 30, 1947, which reads as follows:

W. P. Anderton, M.D., Secretary
Medical Society of the State of New York
292 Madison Avenue
New York City

Dear Doctor Anderton:

The Comitia Minora of the Medical Society of the County of New York beg to extend a warm and cordial invitation to the American Medical Association to hold the Interim Meeting of the House of Delegates of the American Medical Association in January in 1949 in the City of New York.

We should be deeply grateful to be hosts to the House of Delegates and would very much appreciate the courtesy of your extending this official invitation to the House of Delegates.

On behalf of the Comitia Minora, I beg to remain

Yours very cordially.
(Signed) B. Wallace Hamilton, M.D.,
Secretary.

From the New York Convention and Visitors' Bureau and from the Mayor of New York City also are attached invitations to this House of Delegates to hold its Interim Session, 1949, in New York City, and assurance is given that satisfactory facilities are available.

New York City and its environs contain the largest concentration of general practitioners in this country.

The delegation from New York take pleasure in presenting this invitation.

Motion on Meetings of Reference Committees

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. E. S. Hamilton, Illinois, and carried, the reference committees were requested to meet immediately after the House recessed for the day.

Request for Meeting of Council on Scientific Assembly with Committee to Study Revision of Constitution and By-Laws

Dr. F. F. Borzell, vice chairman, requested the Council on Scientific Assembly to meet with the Committee to Study Revision of the Constitution and By-Laws, of which committee Dr. Borzell is chairman.

Motion on Adjournment

It was moved by Dr. Mather Pfeiffenberger, Illinois, seconded by Dr. B. H. Minchew, Georgia, and carried after discussion, that when the House recesses for the day, it recess until tomorrow morning at 10 a.m.

Disposition of Nominations for General Practitioner's Award

Dr. Walter F. Donaldson, Pennsylvania, requested that letters be sent those who sent in nominations for the General Practitioner's Award thanking them and informing them concerning who was awarded the medal. The request was seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried after discussion by Dr. George F. Lull, Secretary, the Speaker and Dr. Donaldson. The Secretary, Dr. George F. Lull, informed the House that if any nominee for the award this year is to be given consideration at a future time a new recommendation should be made.

Invitation to Meet in St. Louis

Dr. Robert E. Schluter, Missouri, in behalf of the Missouri State Medical Association, the St. Louis Medical Society and the whole profession of the State of Missouri, extended an invitation to the House of Delegates to hold its next Interim Session in St. Louis. The Speaker requested that the invitation be filed with the Board of Trustees for its guidance.

After Dr. F. F. Borzell, Vice Speaker, reread the list of members of reference committees, the House recessed at 3:40 p.m. to meet at 10 a.m. on Tuesday, Jan. 6, 1948.

(To be continued)

Coming Medical Meetings

Annual Congress on Medical Education and Licensure, Chicago, Palmer House, Feb. 9-10. Dr. Donald G. Anderson, 535 North Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Chicago, Palmer House, Feb. 6-7. Dr. F. S. Crockett, 535 N. Dearborn St., Chicago 10, Chairman.

American Academy of Orthopaedic Surgeons, Chicago, Palmer House, Jan. 24-29. Dr. Harold B. Boyd, 869 Madison Ave., Memphis, Tenn., Secretary.

American Society for Surgery of the Hand, Chicago, Jan. 23-24. Dr. Joseph H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

Southeastern Allergy Association, Richmond, Va., Jefferson Hotel, Jan. 17-18. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 49. S. C., Secretary.

Official Notes

ELECTRICAL TRANSCRIPTIONS

"Music With Your Meals"

Available Jan. 15, 1948 from the Bureau of Health Education will be a new series of electrical transcriptions, entitled "Music With Your Meals." The topics and speakers of the thirteen quarter-hour programs are as follows:

Nutrition and Health.....	Dr. John B. Youmans
Foods We Eat	Dr. George R. Cowgill
Shopping for Food	Dr. Russell M. Wilder
The Champion Breakfast	Dr. Harold R. Sandstead
The Luncheon Problem	Dr. W. H. Sebrell Jr.
The School Lunch	Dr. Dean F. Smiley
The Evening Meal	Dr. Richmond K. Anderson
Eating Between Meals	Dr. Philip C. Jeans
Psychology of Eating.....	Dr. Henry Poncher
Special Diets	Mrs. Dorothea Turner
Food Allergies	Dr. Samuel M. Feinberg
Food Fads and Fallacies	Dr. James S. McLester
Food Poisoning	Dr. Walton Van Winkle

These interview-type scripts are by Harriet Hester; the music is by Albert Salvi, concert harpist; the interviewer is Elizabeth Hart; the recording is RCA high fidelity orthocoustic. Scripts, posters and press releases accompany the recordings. Local use is conditioned on approval by the county medical society. Transcriptions are available in complete series only, on loan free of all charge except return transportation. Local groups are expected to take appropriate responsibility for successful broadcasting and for return of platters.

Washington Letter

(From a Special Correspondent)

Jan. 15, 1948.

Hawley Committee Studies Improvement of Service Medical and Hospital Facilities

Secretary of Defense Forrestal has asked the special committee headed by Dr. Paul R. Hawley, former Veterans Administration medical director, to submit ideas on how to devise the most efficient medical service for the unified armed forces. He requested comment on the wisdom of establishing a single hospital service. Committee members are the medical chiefs of the Army, Navy and Air Force. Mr. Forrestal said in a memorandum that "What I wish is a thorough, objective and impartial study of the medical services of the armed forces with a view to obtaining, at the earliest possible date, the maximum degree of coordination, efficiency and economy in the operation of these services. . . . The matter of training of medical corps personnel—whether or not they should receive the same training and then be assigned to the services and just how the various hospitals and medical units should be manned—will be taken up by the committee. In short, the Hawley committee has been instructed to make an exhaustive study of the whole medical field and come up with some definite recommendations." Mr. Forrestal suggested specific study of various subjects, including the question of whether certain types of medical service required by the armed forces could be performed more efficiently and economically by utilizing civilian hospital facilities.

Government Sells One Hundred and Eight Hospitals and Nurses' Homes

The Federal Works Agency announced that it had sold one hundred and eight hospitals and nurses' homes, along with four hundred and ninety-three schools, waterworks and other community facilities, at less than a third of the original cost. Many were built during the war.

GOVERNMENT SERVICES

ARMY

TRAINING IN NEUROPSYCHIATRY

The Surgeon General has announced details of the policy relating to advanced professional training in neuropsychiatry, a part of the Army's graduate medical training program. This program will be offered in three Army general hospitals accredited for such training by the Council on Medical Education and Hospitals of the American Medical Association.

The announced policy requires five consecutive years of professional training, providing the prerequisites for admission to examination by the American Board of Psychiatry and Neurology. The officer resident will be retained in this training program unless he is dropped by direction of the Surgeon General following recommendations of a Hospital Education Committee to the effect that the officer lacks professional aptitude.

The five years of training will include three years of formal residency and two years of on the job training that meets standards of the American Board of Psychiatry and Neurology for one or the other of these two specialties. It is contemplated that the officer resident will start in formal training and that the two years of on the job training may be given following the first, second or third year of formal training. However, as far as possible the five individual training years will be consecutive.

Residencies are open to all graduates of accredited medical schools, including the Army Specialized Training Program, who are eligible and have applied for commissions in the Regular Army. These Army of the United States officers are eligible for such commissions after six months of service and receive a \$100 per month increase in pay when accepted.

Although a specified number of years of service is not required after completion of a residency board certification, it is expected that the applicants intend in good faith to make a career of the Regular Army.

REENLISTMENTS FOR GI'S CROWDED OUT OF COLLEGES

The Army and Air Force, recognizing that veterans using their GI Bill of Rights benefits have filled many of the housing accommodations and classes at most of the nation's colleges and universities, have made it possible for men serving short term enlistments to continue in uniform on a standby basis until the institution they wish to attend under the GI Bill has room for them. Under the new plan those in the Army or Air Force who

have unused educational benefits under the GI Bill of Rights may extend their enlistments to three, four or five years with the promise that they will be discharged at any time subsequent to completion of their original term of enlistment in order to use their educational benefits. In every case discharge will be accomplished a full month before the beginning of the school term.

SCIENTIST ADDED TO ASSISTANT SECRETARY'S STAFF

A scientific assistant to the Assistant Secretary of the Army is to be appointed as soon as practicable, the Secretary of the Army announced Dec. 17, 1947. The scientific section will be established in the Assistant Secretary's office to assure for the Army the best possible guidance in research activities and their correlation with those of other scientific staffs of governmental, educational and private institutions throughout the country. The Secretary of the Army recently announced the reconstituting of the Research and Development Division of the General Staff.

ARMY AWARDS AND COMMENDATIONS

Colonel Lee D. Cady

The Legion of Merit has been awarded to Col. Lee D. Cady, M. C., now with the Veterans Administration in Dallas, Texas. The citation read as follows: He rendered exceptionally meritorious service in North Africa, Italy and France from January 1943 to May 1945, as commanding officer, 21st General Hospital. He skilfully directed a threefold expansion of the hospital and perfected its flexibility and ability to handle successfully increased emergency needs for close medical support of tactical operations. He developed an adapted engineer-utility unit capable of meeting urgent construction and operating needs of an isolated general hospital. He also initiated or improved and developed for general application valuable professional and administrative techniques. Under his vigorous and energetic leadership, an exceptional standard of medical treatment was maintained despite a series of long distance moves required by a succession of campaigns. Dr. Cady graduated from Washington University School of Medicine, St. Louis, in 1922 and entered military service in January 1942.

VETERANS ADMINISTRATION

SHORTAGE OF MEDICAL LIBRARIANS

Mr. Francis R. St. John, director of library service of the Veterans Administration, states that there is an acute shortage of medical librarians. They are needed to assist in the medical program of the Veterans Administration. The specialized techniques in medical reference work, bibliography and medical research are especially needed to make medical literature available to residents and interns in the Veterans Administration medical training program. In THE JOURNAL, Oct. 11, 1947, page 358, reference should have been made to the training of hospital librarians rather than to the training of medical record librarians. There are no medical record librarians in the library service program of the Veterans Administration.

CONTRACTS FOR HOSPITALS

Scaled bids are being accepted for the construction of a hundred and fifty bed addition to the Veterans Administration tuberculosis hospital in Portland, Ore. Sets of specifications are available to plumbing, heating and electrical firms for use in preparing sub-bids for general contractors. Although no

deposit is necessary, the specifications must be returned in ten days after the bids are opened publicly on February 24. Bids may be submitted to the central office of the Veterans Administration, Washington, D. C., until that date.

The contract for construction of the veterans' two hundred bed general hospital at Poplar Bluff, Mo., has been awarded to the low bidder for \$5,082,500.

NEW CHIEF OF CLINICAL PSYCHOLOGY

Harold M. Hildreth, Ph.D., has been appointed chief of clinical psychology of the Veterans Administration to succeed J. G. Miller, who has resigned to accept the chairmanship of the department of psychology at the University of Chicago. Dr. Hildreth received his Ph.D. degree from Syracuse University and his A.B. from the University of Nebraska. Formerly he was psychologist at the Syracuse Psychopathic Hospital and senior psychologist for the U. S. Navy; he served at the training station at Sampson, N. Y., and at the naval hospitals at Seattle and Mare Island. He also assisted in the program of the National Research Council for developing tests to select suitable persons for training as pilots in the armed forces.

HOME TOWN PHARMACY PLAN

The Veterans Administration has announced the resignation of Professor W. Paul Briggs, chief of the pharmacy division, who during his twenty-one months of service, among other things, established a home town pharmacy program in the Veterans Administration with the cooperation of state pharmaceutical associations to provide drugs at local pharmacies to veterans with service-connected disabilities undergoing outpatient treatment. Professor Briggs also developed a procedure for the selection of drugs used in veterans' hospitals and homes by creating standing committees on therapeutic agents in each field station. He was for many years professor of pharmacy and dean of the school of pharmacy at George Washington University, Washington, D. C., and was treasurer of the U. S. Pharmacopeia.

WOMEN VETERAN PATIENTS

There were 2,035 hospitalized women veterans under the care of the Veterans Administration as of October 1947, an increase of 905 in the previous fifteen months. In addition, another 238 women veterans were being cared for in veterans' domiciliary homes, bringing the total number of women under Veterans Administration care at that time to 2,273. Of the 2,035 in hospitals, 1,152 were general medical and surgical patients; 246 had tuberculosis; 502 were psychotics and 135 had other neuropsychiatric disorders.

Disability compensation or pension as a result of war service was being given to 13,652 women veterans of World War II as of last June 30, and to 4,564 women veterans of World War I.

PUBLIC HEALTH SERVICE

AVAILABILITY OF MALARIA TO TREAT NEUROSYPHILIS

The U. S. Public Health Service since 1931 has distributed malaria inoculums to qualified physicians and institutions for the treatment of neurosyphilis. The material is sent regularly on the Tuesday following the date of the request, and shipment is usually made by air express collect. Those desiring malaria inoculums should address requests to Dr. Martin D. Young, Post Office Box 1344, Columbia, S. C. A vacuum bottle of at least 1 pint capacity should be sent. Information as to the species of malaria desired should accompany the request, as well as the following information: number of patients to be inoculated; race of patients; previous history of malaria, including species. Ordinarily, *Plasmodium malariae* (quartan malaria) should be used for white patients who have had a previous infection of *Plasmodium vivax* (tertian malaria) and for all Negro patients. *P. vivax* is ordinarily used for white patients without a history of malaria.

AWARDS FOR CANCER TEACHING AND CONTROL

The National Advisory Cancer Council of the U. S. Public Health Service awarded \$1,500,000 during December to colleges, research laboratories and public health institutions throughout the country. Of this sum, \$593,130 was awarded to twenty-six medical schools for the improvement of cancer teaching and nearly \$750,000 in forty-six grants was awarded for clinical and basic bacteriologic research. For the first time grants were given to scientists working outside the United States. Dr. A. Lacassagne of the Pasteur Institute in Paris, France, being awarded \$13,380 and Dr. L. Doljanski of the Hebrew University in Palestine \$10,000. Grants made for cancer control projects totaled \$132,645; they ranged from \$7,670 given to the University of Tennessee for a cancer tissue diagnosis service and tumor registry to \$30,000 to Memorial Hospital, New York, for cancer pathology and medical training. The Memorial Hospital also received more than \$100,000 for a total of five research projects, constituting the largest research grant given a single institution by the National Advisory Cancer Council.

MENTAL HYGIENE CLINIC FOR VETERANS

A newly organized mental hygiene clinic has been opened in Hartford, Conn., for full time operation by the Veterans Administration. The clinic is headed by Dr. Isadore Schnap, formerly chief of the neuropsychiatric service at the veterans' hospital in Newington, Conn. Facilities are available for the outpatient treatment of those with service-connected neuropsychiatric conditions.

DR. HAWLEY DECORATED

The Norwegian government on Dec. 27, 1947 decorated Dr. Paul R. Hawley, at that time chief medical director of the Veterans Administration, with the Order of Saint Olav, commander grade, for his medical work with Norwegian forces through the government in exile in London. During the war Dr. Hawley was a major general serving as chief medical officer of the U. S. Army in the European theater of operations.

PERSONAL

Dr. William G. Lewis has been assigned as clinical director and chief of professional services at the veterans' hospital, Walla Walla, Wash. Previous to the war Dr. Lewis was physician in charge of the U. S. Indian Hospital in Santa Fe, N. Mex., and during the war he served with the 30th Evacuation Hospital in the Philippine Islands.

NEW ASSISTANT SURGEON GENERAL

The Surgeon General has announced the appointment of Mark Dexter Hollis as assistant surgeon general and chief of the Sanitary Engineering Division of the U. S. Public Health Service effective January 1, replacing John K. Hoskins, who retired after thirty-four years of service. Mr. Hollis comes to the headquarters office from the Communicable Disease Center, Atlanta, Ga., where he was officer in charge. He directed a comprehensive program for the control of malaria and typhus among military personnel in the United States. During his ten years with the service Mr. Hollis has carried on other important programs in sanitary engineering and preventive medicine.

MORE GRANTS FOR RESEARCH IN MENTAL HEALTH

The Federal Security Agency, Washington, D. C., announces the award of six more grants for research in mental health under the National Mental Health Act. The grants were recommended by the National Advisory Mental Health Council and were approved by the Surgeon General of the U. S. Public Health Service. Twenty-five grants in this field had been awarded previously. The six recent grants were awarded to the following institutions:

- University of California, Berkeley, Calif.
Directors of Project: Dr. Karl M. Bowman, professor of psychiatry, and Dr. Jurgen Ruesch, research psychiatrist, the Langley Porter Clinic.
- Columbia University, College of Physicians and Surgeons, New York.
Director of Project: Dr. Abner Wolf, associate professor of neuropathology.
- Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine.
Director of Project: J. P. Scott, D.V.M., chairman, Division of Behavior Studies.
- Mu Iota Sigma Fraternity, Illinois School for the Deaf, Jacksonville, Ill.
Director of Project: M. Arline Albright, associate professor of education and psychometrist, Milwaukee.
- Wayne University School of Public Affairs and Social Work, Detroit.
Directors of Project: Fritz Redl, professor of social work, and Ronald Lippitt, director of research (Research Center for Group Dynamics, Massachusetts Institute of Technology, Cambridge, Mass.)
- Wesleyan University, Middletown, Conn.
Director of Project: David C. McClelland, assistant professor, Department of Psychology.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest; such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Plague Infection in Wood Rats.—The California Department of Public Health reports that tissue from 4 wood rats collected near the Fitzhugh Ranger Station in Modoc County were proved positive for bubonic plague in the laboratory of the University of California Hooper Foundation. A human case of plague occurred in this locality early in the summer.

Dr. Nelson Appointed Assistant Dean.—Dr. Norman B. Nelson, associate professor of public health and chairman of the department, University of California at Los Angeles, has been appointed assistant dean of the School of Medicine. He will assist Dr. Stafford L. Warren in picking a staff and planning the buildings in the new medical school. Dr. Nelson, a graduate of the University of California at Los Angeles, was formerly medical director of the Los Angeles City Health Department.

Outbreak of Q Fever.—The state department of public health on Dec. 13, 1947 reported an outbreak of Q fever in Southern California, with 116 cases discovered since May. It is the third major outbreak in the United States. Previous outbreaks of Q fever occurred in the stockyards area of Chicago and Amarillo, Texas, last year. The U. S. Public Health Service and the Army Medical School are working with state and local authorities to learn if cattle are reservoirs for the disease and how it is transmitted. A laboratory for the study of Q fever was established in the Los Angeles area early this year (THE JOURNAL, Nov. 29, 1947, p. 859).

COLORADO

Research in Trichinosis.—A research grant of \$4,000 has been made to Dr. James B. McNaught, professor of pathology at the University of Colorado Medical Center, Denver, by the Lilly Research Laboratories of Eli Lilly & Company, Indianapolis, for experimental studies of therapeutic agents in trichinosis.

Dr. Sabin to Head Denver's Health Service.—Dr. Lawrence R. Sabin, Denver, became the city's manager of health and charities January 1, succeeding Dr. Solomon S. Kauvar, who resigned to resume private practice. Dr. Sabin, now president of the Western branch of the American Public Health Association, has been head of the state subcommittee on health. She had retired a few years ago from the Rockefeller Institute of Medical Research, New York.

Wading Tank for Poliomyelitis Patients.—Under a grant from the National Foundation for Infantile Paralysis, the University of Colorado Medical Center, Denver, has received a special treatment wading tank for poliomyelitis patients, which is said to be the second of its kind to be made in the United States. The first was installed at the Georgia Warm Springs Foundation, and the third is to be prepared for the Mayo Clinic, Rochester, Minn. The tank is being installed in the department of physical medicine and rehabilitation.

ILLINOIS

State Program to Control Syphilis.—The state department of public health has made contracts with twenty-three hospitals throughout the state to provide facilities for the rapid treatment of syphilis. Any person suffering from infectious syphilis who is unable to pay for treatment may be sent to these hospitals at state expense for the full course of rapid treatment. The department also maintains thirty-one clinics throughout the state, where any one may go for a diagnosis of venereal disease. Trained workers are employed to follow up the contacts of patients with venereal disease, and laboratory service is available to aid physicians in diagnosing cases.

Chicago

Guest Speakers on January 21.—At the January 21 meeting of the Chicago Medical Society in the John B. Murphy Memorial Auditorium Dr. Clayton T. Beecham, Philadelphia, will speak on "Treatment of Postpartum Hemorrhage" and Dr. Joseph Trueta, Nuffield Institute for Medical Research, Oxford, England, on "Renal Circulation and Its Clinical Importance." A dinner in honor of the guest speakers will be held at the Drake Hotel at 5:30 p. m. Call the Chicago Medical Society for reservations.

Appointments at the Hektoen Institute.—At the annual meeting of the board of trustees of the Hektoen Institute for Medical Research, held on Dec. 22, 1947 at the University Club, the following appointments were made: Dr. John B. O'Donoghue, professor of surgery, Loyola University School of Medicine; Dr. Frederick H. Falls, chairman of the department of obstetrics and gynecology, University of Illinois College of Medicine, and Mr. Irv Kupcinet, as members of the board. Drs. Morris T. Friedell, Louis P. River, Oak Park, and Donald D. Kozoll, Evanston, were appointed as research associates, and Dr. William S. Hoffman as director of biochemistry.

Dr. Armstrong Appointed to Presbyterian Hospital Staff.—Dr. S. Howard Armstrong Jr., Boston, has been appointed full time chairman of the department of medicine at Presbyterian Hospital, and will have charge of the department's educational and research work. He succeeds Dr. Ralph C. Brown as head of the department of medicine, heretofore an honorary position carrying no remuneration. Dr. Brown, having reached the retirement age, resigned June 1, 1947 and is now on the consulting attending staff. The hospital is enlarging its research activities by setting up a laboratory of medicine, which will be equipped early this year under Dr. Armstrong's direction, in buildings formerly occupied by Rush Medical College. Laboratories of pathology and biochemistry were established previously. Dr. Armstrong is a graduate of Harvard University Medical School, Boston, 1937, and has devoted the last seven years to graduate study of internal medicine at Harvard and the Massachusetts Institute of Technology.

IOWA

Society News.—Dr. Sterling Bunnell, San Francisco, will address the Linn County Medical Society at its meeting at the Hotel Montrose, Cedar Rapids, January 22 at 6 p. m. on "The Reconstruction of the Hand."

MICHIGAN

Dr. McClure Honored.—Dr. Roy D. McClure, surgeon in chief of Henry Ford Hospital, Detroit, was honored at a testimonial dinner given by his surgical residents and associates, past and present, at the Detroit Club Nov. 22, 1947. Over fifty men, most of whom had received the major part of their surgical training under Dr. McClure, were in attendance. Among the speakers were Dr. Samuel F. Marshall, Boston; Dr. Henry N. Harkins, Seattle; Mr. Charles F. Kettering, Detroit, and Mr. Edgar A. Guest, Detroit. A presentation speech was made by Dr. William A. Altemeier, Cincinnati. The gift was a television set.

Dr. Seevers Made Associate Dean.—Dr. Maurice H. Seevers, chairman, department of pharmacology, University of Michigan Medical School, Ann Arbor, has been appointed associate dean of the medical school. Dr. Seevers will continue to serve as head of his department. He was graduated from Rush Medical College in 1932 and served as instructor in pharmacology and physiology at Loyola University School of Medicine, Chicago, from 1928 to 1930, when he became assistant professor of pharmacology at the University of Wisconsin. He was promoted to associate professor in 1934 and remained on the Wisconsin faculty until 1942, when he went to Ann Arbor.

NEW JERSEY

Annual Conference on Protein Metabolism.—The fourth annual Conference on Protein Metabolism, sponsored by the Bureau of Biological Research, Rutgers University, will be held in New Brunswick February 6-7. The discussions will pertain to intermediary protein metabolism, accessory substances, endocrine relationships and therapeutic aspects. The conference is open to any one whose registration is received by January 24. Blanks may be obtained from Professor William H. Cole, Rutgers University.

MISSOURI

Rehabilitation Institute a Community Project.—The Rehabilitation Institute, 2700 McGee Street, Kansas City, is now operating as a community project sponsored by the Jackson County Medical Society, the county society for crippled children, the county chapter of the National Foundation for Infantile Paralysis, the Goodwill Industries, and three social service organizations. The institute makes available to the members of the medical profession specialized services in the three departments of physical therapy, occupational therapy and a sheltered work unit. Patients are accepted only on recommendation of their physicians, who prescribe treatment, receive periodic reports of the patients' progress and reexamine patients as frequently as desired. Dr. Rexford L. Diveley, Kansas City, is chairman of the Jackson County Medical Society's committee to serve as consultants at the institute and help formulate the medical policies.

NEW YORK

Richmond County Postgraduate Instruction.—The Medical Society of the State of New York with the cooperation of the New York State Department of Health has arranged the following lectures for the Richmond County Medical Society, to be given by New York physicians Friday afternoons at 4:30 in the auditorium of the U. S. Marine Hospital, Stapleton, Staten Island:

February 6, Dr. E. Charles Kunkle, Headache Mechanisms.
February 13, Dr. Foster Kennedy, Nervous Conditions Associated with Allergy.
February 20, Dr. S. Bernard Wortis, Recent Advances in Psychiatry.
February 27, Dr. Paul Reznikoff, Diagnosis and Treatment of Anemia.

New York City

Society News.—Dr. David Adlersberg will read a paper entitled "Newer Advances in Sprue" at the next monthly conference of the New York Institute of Clinical Oral Pathology, January 26, at the New York Academy of Medicine at 9 p. m.

Advisory Committee on Geriatrics.—An Advisory Committee on Geriatrics for the city department of health met December 19 with Dr. C. Ward Crampton as chairman. The committee expects to work in cooperation with the Joint Legislative Committee of the State of New York, which met Dec. 11, 1947 in an open hearing on age and aging, the New York State Medical Society Subcommittee on Aging and the Joint Committee on Chronic Illness of the American Medical Association.

Society News.—The pediatric section of the Kings County Medical Society and the Academy of Medicine of Brooklyn at a meeting January 26 at the county society building will present certificates of merit to the former presidents of the section who have served since reorganization in 1936. Dr. A. W. Martin Marino, president, Kings County Medical Society, will make the presentation. The guest speaker will be Dr. Harold W. Dargeon, New York, on "Neoplastic Diseases in Infancy and Childhood." The meeting will begin at 9 p. m. following a dinner given at the Unity Club in Brooklyn by the president of the pediatric section, Dr. Samuel K. Levy.

Comprehensive Health Survey.—The Health Council of Greater New York, Inc., is undertaking the "first comprehensive health survey of New York City in twenty years" as a joint venture with the Public Health Relations Committee of the New York Academy of Medicine. The purpose of the survey is to assemble data for use by the long range program committee of the health council, which is made up of representatives of fifty-five health agencies and others in allied fields in the city. The survey is being directed by Edward H. L. Corwin, Ph.D., executive secretary of the Public Health Relations Committee. It is anticipated that the work will take about two years.

NORTH CAROLINA

Medical and Surgical Symposium.—Watts Hospital, Durham, will present a Medical and Surgical Symposium February 11-12 beginning at 11 a.m. and extending through the evenings. Speakers on Wednesday's program include:

Drs. Virgil H. Moon and Garfield G. Duncan, both of Philadelphia, Clinicopathologic Conference.
Dr. Reed M. Nesher, Ann Arbor, Use of Endocrines in Management of Urogenital Tract Disease.
Dr. Louis N. Katz, Chicago, Recent Advances Concerning Coronary Heart Disease.
Dr. Lewis M. Hurxthal, Boston, Diagnosis of Pituitary Disease.
Dr. Richard B. Cattell, Boston, Pathogenesis and Treatment of Cancer of the Large Bowel.

Thursday's program includes:

Drs. Tracy B. Mallory and Conger Williams, Boston, Clinicopathologic Conference.
Dr. Nelson W. Barker, Rochester, Minn., Anticoagulant Therapy.
Dr. Ralph K. Ghormley, Rochester, Minn., Late Changes in Joints as a Result of Internal Derangements of the Knee.
Dr. Elliott P. Joslin, Boston, Treatment of Diabetes in Every Doctor's Practice.
Dr. Paul R. Cannon, Chicago, Nutritional Advances in Medicine and Surgery.

OHIO

Memorial Post.—The W. F. Bartz American Legion Post, Youngstown, established in memory of Dr. Walter F. Bartz, who lost his life in the service of his country, has received its charter. Physicians of the Youngstown area who desire membership should contact the temporary commander, Dr. Ivan C. Smith, Home Savings and Loan Building.

Dr. Edgar V. Allen Comes to Cleveland.—Dr. Edgar V. Allen, Rochester, Minn., has been appointed chief of the division of internal medicine at the Cleveland Clinic and will come to Cleveland in the near future. Dr. Allen has been with the Mayo Clinic, where he is chief of a section in the division of internal medicine and associate professor of medicine at the University

of Minnesota in the Mayo Foundation. He is a graduate of the University of Nebraska Medical School, 1925. In 1929 he studied in Germany and England as a fellow of the National Research Council, returning to the Mayo Clinic in 1930. In World War II Dr. Allen served as a colonel in the medical corps of the U. S. Army, and as consultant in medicine for the Seventh Service Command the Legion of Merit was awarded to him.

PENNSYLVANIA

Society News.—Dr. Herbert T. Kelly of Philadelphia recently presented a paper, "Nutrition—Biochemical Physiologic and Psychologic Aspects," before the Luzerne County Medical Society, Wilkes-Barre.

Open Child Guidance Center.—Announcement is made of the opening of the Child Guidance Center of Lackawanna County with offices in the Chamber of Commerce Building, Scranton. This center is a community project for the purpose of consultation, treatment and training. Dr. Samuel A. Guttman is serving as director.

Philadelphia

Hospital News.—The Skin and Cancer Hospital of Philadelphia announces the association of the respective professors of dermatology and syphilology of the University of Pennsylvania and Temple University, Dr. Donald M. Pillsbury and Dr. Carroll S. Wright, as co-medical directors of the hospital. The responsibility for the professional care of outpatients and inpatients in the hospital has been delegated to these two services, and a considerable number of new appointments to the attending and consultant staffs have already been made.

Ten New District Health Centers.—Ten consolidated health centers, each to be situated in a district of 200,000 inhabitants, are being set up by the Department of Public Health of Philadelphia. Each center will house a child health center, dental clinic, chest clinic, venereal disease clinic and offices for the inspectors for the district from the Divisions of Housing and Sanitation and of Milk, Livestock, Meat and Food. On Oct. 14, 1947 the city council appropriated seven tracts of land with the buildings erected on them for use as District Consolidated Health Centers. One property has not as yet been selected. One center at 20th and Berks streets, manned entirely by Negro physicians and nurses, is complete. In addition there are twelve child health centers in rented quarters, thirteen chest clinics and fourteen venereal disease clinics.

WISCONSIN

Bardeen Memorial Lecture.—The Dr. Charles R. Bardeen Memorial Lecture will be delivered by Dr. George W. Bartelmez, professor of anatomy, University of Chicago, at 8 p.m. February 17 in the auditorium of the Service Memorial Institutes, Madison. This annual lectureship is sponsored by Phi Chi Medical Fraternity at the University of Wisconsin. Dr. Bardeen was the first dean of the Wisconsin Medical School, serving in that capacity from 1907 until his death in 1935. In addition, he was professor of anatomy in the medical school.

Research Group Presents Program.—The Cancer Research Group, associated with the McArdle Memorial Laboratory of the University of Wisconsin Medical School, Madison, presented the scientific program for the January meeting of the University Medical Society January 6. The McArdle Memorial Laboratory is one of eight similar institutions in the United States which is devoting full time study and investigative research to the problems of cancer. Dr. Harold P. Rusch is director of the group. The meeting was open to all persons interested in the subject of cancer.

FOREIGN

Society Election.—At the annual meeting of the Royal College of Physicians of Edinburgh, Scotland, Dec. 4, 1947 Dr. William D. D. Small was elected president.

Cholera in Syria and Lebanon.—The *New York Times* reports an outbreak of cholera in two Syrian villages, where 53 cases and 15 deaths had been officially reported on Dec. 23, 1947. Only medical personnel, food convoys and a train carrying water from Damascus to replace water from infected wells were allowed to enter the city. The mayor of Damascus announced that a daylong curfew would be imposed successively on each of four sections of the city while all inhabitants underwent compulsory vaccination. The Syrian government prohibited all departures from Damascus or the Hauran district unless the travelers held certificates of inoculation at least three days old and not older than one month. Air travel between Syria, Lebanon and Iraq was suspended. Two cholera specialists arrived from Egypt with 296,000 bottles of vaccine and enough was en route to inoculate more than 1,000,000 persons.

GENERAL

Postgraduate Assembly in Endocrinology.—The Association for the Study of Internal Secretions will hold a Postgraduate Assembly in Endocrinology in Los Angeles February 23-28. The faculty is composed of outstanding students of endocrinology in the United States and Canada. Applications may be sent to Dr. E. Kost Shelton, chairman, Committee on Postgraduate Instruction, 921 Westwood Boulevard, Los Angeles 24.

Decline in Mortality from Toxic Goiter.—The *Statistical Bulletin* of the Metropolitan Life Insurance Company reports a 40 per cent reduction in the mortality from toxic goiter among its industrial policyholders in the period from 1940 to 1947. The adjusted death rate from this cause at ages 1 to 74 years declined from 1.9 per 100,000 in 1940 to 1.1 in 1946. In 1945 there were 2,468 deaths from toxic goiter in the general population of the United States as compared with 3,659 in 1940.

Special Society Elections.—The National Medical Association installed Dr. J. A. C. Lattimore, Louisville, Ky., as president and chose Dr. C. Austin Whittier, San Antonio, Texas, president-elect; John T. Givens, Norfolk, Va., secretary, and Eugene T. Taylor, St. Louis, treasurer, at a recent meeting in Los Angeles. At the annual meeting of the American Academy of Dermatology and Syphilology in Chicago, December 6-11, Clyde L. Cummer, Cleveland, was elected president, Francis E. Seneac, Chicago, vice president, and Earl D. Osborne, Buffalo, secretary-treasurer. The American Association for the Advancement of Science at its meeting in Chicago Dec. 26, 1947 chose Dr. Elvin C. Stakman, Ph.D., of St. Paul as president-elect. Among sectional vice presidents is Dr. Shields Warren, Harvard University, Boston, chairman of the medical sciences section.

Meeting of Surgeons of the Hand.—The American Society for Surgery of the Hand will meet at Thorne Hall, Northwestern University, Chicago, January 23-24 beginning at 9 a.m. Speakers on the program, which is entirely clinical, will be Drs. Condit W. Cutler, Jr., New York; Colin G. Thomas, Iowa City; John W. Kirklin, Rochester, Minn.; William H. Frackelton, Milwaukee, Wis.; Clarence A. Luckey, Oakland, Calif.; Michael L. Mason, Sumner L. Koch and Harvey S. Allen, Chicago; Rufus H. Alldredge, New Orleans; J. William Littler, New York; Lieut. Col. Gilbert L. Hyroop, MC, Battle Creek, Mich.; Walter C. Graham, Santa Barbara, Calif.; Daniel J. Riordan, Buffalo; Sterling Bunnell, San Francisco; Donald B. Slocum, Eugene, Ore.; and C. Hunter Sheldon, Pasadena, Calif. The society dinner will be held Friday, 6:30 at the University Club.

Society News.—The National Society for Crippled Children and Adults, Inc., which met in Chicago November 2-5, reelected Col. E. W. Palmer, Kingsport, Tenn., president, and Lawrence J. Linck, Chicago, secretary. Five states (Washington, Oregon, Montana, Rhode Island and North Dakota) and Hawaii became new members of the society. At the annual meeting of the Association of State and Territorial Health Officers in Washington, D. C., December 1-4, attended by representatives of forty-eight states and territories, Dr. Vlado A. Getting, Boston, was elected president and Dr. Leroy E. Burney, Indianapolis, secretary-treasurer. The Southern Medical Association at its recent meeting in Baltimore chose Dr. Oscar B. Hunter, Washington, D. C., president-elect, and Dr. David G. Miller Jr., Morgantown, Ky., secretary. Dr. George E. Burch, Tulane University of Louisiana School of Medicine, New Orleans, was presented the association's research medal "in recognition of his valuable contribution to the understanding of cardiovascular disorders."

Award of the Strong Medal.—The American Foundation for Tropical Medicine presented the fifth annual Richard P. Strong Medal for Distinguished Service to Tropical Medicine to Dr. Neil P. Macphail, veteran surgeon and sanitarian of the United Fruit Company at Guirigua, Guatemala, at its annual dinner in New York January 8. Among the speakers were Major Gen. Raymond W. Bliss, Surgeon General, U. S. Army; Admiral Thomas C. Kinkaid, commander, Eastern Sea Frontier, and the Hon. Dr. Francis P. Corrigan, advisor to the United States Mission to the United Nations.

Dr. Macphail has been active in tropical medicine in Middle America since 1907, when he accepted a position as quarantine doctor for the port of Belize, British Honduras. The following year he became medical superintendent of the United Fruit Company's east coast division of Guatemala, a position he still holds. During the past forty years his efforts in combating yellow fever, cholera, endemic malaria, dysenteries, snake bite, night blindness and other tropical maladies have earned for him the name *el amado medico* (the beloved doctor).

Graduate Courses in Thoracic Diseases.—The American Trudeau Society and the medical section of the National Tuberculosis Association are offering two and four week postgraduate courses in thoracic diseases in four sections of the country during the early part of 1948. 1. The course for Ohio, Indiana, Michigan, Illinois, Wisconsin, Missouri, Iowa and Minnesota will be held at Herman Kiefer Hospital, Detroit, March 22-26 in cooperation with the Detroit Department of Health and Wayne University College of Medicine. Dr. Paul T. Chapman, Herman Kiefer Hospital, is chairman, and the registration fee is \$50. 2. For Maryland, District of Columbia, Virginia, West Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia and Florida, the course will be at Durham, N. C., March 22-27 in cooperation with the medical schools of the University of North Carolina, Chapel Hill, and Duke University, Durham. The chairman is Dr. Henry S. Willis, North Carolina Sanatorium, Sanatorium, N. C., and the registration fee is \$50. 3. For Maine, Vermont, New Hampshire, Massachusetts, Connecticut and Rhode Island, the course will be in Boston April 5-17 in cooperation with the medical schools of Harvard University, Tufts and Boston University under the chairmanship of Dr. Theodore L. Badger, 264 Beacon Street, Boston. The registration fee is \$100. 4. The course for Alabama, Arkansas, Louisiana, Mississippi, Oklahoma and Texas will be April 12-24 in Dallas, Texas, under the chairmanship of Dr. Julius L. Wilson, 1430 Tulane Avenue, New Orleans 13. The fee is \$100.

Report on Cholera in Egypt.—The World Health Organization in its November *Chronicle* published a report of the first eight weeks of the cholera epidemic in Egypt. Four cases occurred simultaneously at El Kuein and spread through the neighboring provinces in Lower Egypt and to the canal ports of Ismailia and Suez. In the third week all Delta provinces were infected, but in Upper Egypt the disease remained confined to Giza. During the fourth week the incidence rose to a twenty-four hour peak figure of 1,022 with 581 deaths, and in Upper Egypt the total for the week was 4,566 cases with 2,057 deaths. The epidemic reached its greatest height during the fifth week, with 5,976 cases and 2,933 deaths. Suez alone was cholera free. The sixth week showed the first indications of the decline of the epidemic. By the seventh week cases had declined to 2,218, and of the four thousand villages considered infected, when the epidemic was at its height, only eighty-eight remained infected. During the eight weeks under review the epidemic produced 20,877 cases with 10,265 deaths, a case fatality of 49.16 per cent. In 1902 when Egypt had its last previous epidemic there were 40,613 cases and 34,595 deaths, a fatality rate of 85 per cent. The present population of Egypt is almost double that of 1902. The *Chronicle* reports that in spite of repeated re-introduction from villages the disease failed to establish itself in any town provided with satisfactory water supplies and adequate disposal systems. As soon as 80 per cent of the population had received anticholera vaccine, the over-all incidence began to fall, although the decrease came at the time of the spontaneous autumnal decline characteristic of each previous outbreak of cholera in Egypt.

CORRECTION

Dosage of Acetylsalicylic Acid.—In the abstract entitled: "Succinate-Salicylate Therapy in Arthritis" in THE JOURNAL, Dec. 20, 1947, page 1114, the dosage of acetylsalicylic acid should be 45 grains (2.91 Gm.) instead of 45 Gm.

Marriages

DANIEL GEDDIE MONROE, Fayetteville, N. C., to Miss Bette Thomas Sampson of Bennettsville, S. C., Oct. 4, 1947.

JOHN ALEXANDER BENSON Jr., Windsor, Conn., to Miss Irene Zucker of Fort Myers, Fla., recently.

JOSEPH FRASIA JONES Jr. to Miss Henrietta Short Tabb, both of Richmond, Va., Nov. 8, 1947.

JOSEPH FLOYD HOCOTT, Abilene, Texas, to Miss Betty Gwen Barlow, in New York, Nov. 24, 1947.

JEROME K. BURTON to Mrs. Marguerite Whisman Riordan, both of Boise, Idaho, Sept. 23, 1947.

JOHN EDWARD SMITH, Fitzgerald, Ga., to Mrs. Anne Shelton Roberts in Atlanta, Oct. 11, 1947.

JAMES E. FORSYTH, Battle Creek, Mich., to Miss Winifred Backman of St. Joseph, recently.

JOHN M. LANGSTAFF, Fairbury, Ill., to Miss Ruth A. Ford of Chatsworth, Oct. 6, 1947.

Deaths

James Chambers Pryor * Medical Director, Rear Admiral, U. S. Navy, retired, Brooklyn; born in Winchester, Tenn., on March 13, 1871; University of Nashville Medical Department and the Vanderbilt University College of Medicine in Nashville in 1894; entered the Navy in March 1897; veteran of the Spanish-American War; at various times served at the Naval Medical School and the Naval Hospital in Washington, D. C., the Norfolk Navy Yard, the Naval Hospital at Annapolis and as fleet surgeon and aid on the staff of the commander of the United States fleet; formerly medical officer at the first district in Boston; commanding officer of the Naval Medical Supply Depot in Brooklyn when he retired in 1935; fellow of the American College of Surgeons; past president of the Association of Military Surgeons of the United States; delegate to the International Congress of Military Medicine and Pharmacy serving once at The Hague and again in Brussels; formerly professor of preventive medicine at George Washington University School of Medicine in Washington, D. C.; attending physician at the White House during the administration of President Theodore Roosevelt; author of "Naval Hygiene"; formerly editor of the *Naval Medical Bulletin*; died in the Naval Hospital Sept. 8, 1947, aged 76, of arterial hypertension.

Richard Henry Hutchings * Utica, N. Y.; born in Clinton, Ga., Aug. 28, 1869; Bellevue Hospital Medical College, New York, 1891; lecturer on psychiatry and clinical professor of psychiatry at the Syracuse University College of Medicine from 1908 to 1934, when he became emeritus clinical professor; served during World War I; specialist certified by the American Board of Psychiatry and Neurology; member and past president of the American Psychiatric Association; member of the American Psychoanalytic Association; for many years superintendent of St. Lawrence State Hospital in Ogdensburg and Utica State Hospital; served as editor of the *Psychiatric Quarterly*; died in Clinton, Ga., Oct. 28, 1947, aged 78, of cerebral hemorrhage.

Henry Milligan Chandler * Orangeburg, N. Y.; born in South Orange, N. J., Sept. 15, 1879; Albany (N. Y.) Medical College, 1903; specialist certified by the American Board of Psychiatry and Neurology, Inc.; member of the American Psychiatric Association; associate director of the Rockland State Hospital; at various times affiliated with the New Jersey State Village for Epileptics, Skillman, N. J., Manhattan State Hospital in New York, Southeastern Hospital for the Insane, Madison, Ind., Connecticut State Hospital in Middletown, Blythewood Sanatorium, Greenwich, Conn., Utica (N. Y.) State Hospital and Kings Park (N. Y.) State Hospital; died in St. Luke's Hospital, New York, Oct. 19, 1947, aged 68, following an operation for gallstones.

Harry Raphael Jerome Kelly, Weehawken, N. J.; born in New Orleans, June 25, 1899; University of Virginia Department of Medicine, Charlottesville, 1931; member of the American Medical Association; a major in the medical corps, Army of the United States, during World War II, receiving official commendation from the British government and from the chiefs of staff of the U. S. Army for his care of liberated prisoners of war from the Pacific area; chief of the medical service of St. Mary's Hospital in Hoboken and chief of the chest clinic at St. Vincent's Hospital in New York, where he died Oct. 17, 1947, aged 48, of coronary thrombosis.

Leon Alphonse Martel * Washington, D. C.; Georgetown University School of Medicine, Washington, 1908; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; professor of gynecology and director of the department at his alma mater; fellow of the American College of Surgeons; on the staff of Georgetown University and Gallinger Municipal hospitals; served during World War I; past president of the Georgetown Clinical Society and the Washington Gynecological Society; died Oct. 11, 1947, aged 64, of coronary sclerosis and hypertension.

Clifford Reeder Hervey, St. Petersburg, Fla.; born in Mount Vernon, Ohio, Aug. 14, 1867; University of Michigan Homeopathic Medical School, Ann Arbor, 1893; joined the state department of health in New York as sanitary supervisor in 1917, a title later changed to district state health officer in 1923; on August 31, 1937, retired after twenty years in the health service of the state; at one time served on the board of managers of the Oswego County Sanatorium in Richland, N. Y., and member of the city board of health and Civil Service Board in Oswego; died Oct. 16, 1947, aged 80, of coronary occlusion.

Cassius D. Alexander, Vaiden, Miss.; Memphis (Tenn.) Hospital Medical College, 1900; past president of the school board; formerly county health officer; served overseas during World War I; died Oct. 17, 1947, aged 73, of heart disease.

Jarvis Lee Anderson * Manchester, Ky.; Kentucky School of Medicine, Louisville, 1897; served as vice president and member of the board of directors of the First National Bank of Manchester; died Oct. 16, 1947, aged 76, of angina pectoris.

William Coleman Armstrong * Windsor, N. Y.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1893; served as a member of the school board; vice president and director of the Windsor National Bank; died in the Binghamton (N. Y.) City Hospital Oct. 11, 1947, aged 78, of chronic myocarditis.

Arthur Monroe Barrows * Trenton, N. J.; Jefferson Medical College of Philadelphia, 1901; affiliated with the Mercer Hospital, where he died Oct. 10, 1947, aged 71, of coronary thrombosis.

Frank Tully Bascom, Rochester, N. Y.; Hahnemann Medical College and Hospital of Philadelphia, 1901; surgeon for the New York Central and Pennsylvania railroads; affiliated with Genesee Hospital and Highland Hospital, where he died Oct. 21, 1947, aged 71, of heart block and cerebral hemorrhage.

Ewald George Baum * Wellesley, Mass.; George Washington University School of Medicine, Washington, D. C., 1911; served on the staff of Leonard Morse Hospital in Natick; died in Canaan, N. H., Oct. 22, 1947, aged 62, of coronary thrombosis.

John Columbus Belue, Rogersville, Ala. (died in Alabama in 1890); died Oct. 14, 1947, aged 89, of heart disease.

Charles Percy Bonham, Barton, N. Y.; Syracuse University College of Medicine, 1906; formerly practiced in Buffalo; died in Tioga County General Hospital in Waverly, Oct. 4, 1947, aged 66, of pneumonia, subarachnoid hemorrhage and Parkinson's disease.

Kawilins Cadwallader, San Francisco; University of California Medical School, San Francisco, 1893; formerly on the faculty of his alma mater; at one time affiliated with the U. S. Public Health Service Reserve; served during World War I; author of "Hand-Book of Obstetrics"; died in Palo Alto Oct. 12, 1947, aged 81, of diabetes mellitus.

William Mack Capehart, Greenville, N. C.; Meharry Medical College, Nashville, Tenn., 1915; died Oct. 12, 1947, aged 63, of cardiovascular renal disease.

Joseph Harvey Chance, Detroit; Chicago College of Medicine and Surgery, 1914; member of the American Medical Association; served during World War I; died in the Lincoln Hospital Oct. 26, 1947, aged 59, of hypertensive heart disease.

Robert Brigham DeLong, Worcester, Mass.; McGill University Faculty of Medicine, Montreal, Canada, 1941; served in the Pacific and in Leyte during World War II; interned at the Montreal General Hospital in Montreal and the Worcester City Hospital, where he died Oct. 14, 1947, aged 34.

Vivian Inez Douglas, Newark, N. J.; Meharry Medical College, Nashville, Tenn., 1947; received an appointment as an intern at the Lincoln Hospital in Durham, N. C.; died in the Newark Eye and Ear Infirmary Oct. 14, 1947, aged 27, of spinal meningitis.

Howard Trivers Exley, Savannah, Ga.; Atlanta College of Physicians and Surgeons, 1911; member of the American Medical Association; affiliated with the Warren A. Candler Hospital, where he died Oct. 22, 1947, aged 58, of heart disease.

Walter Chester Hart, McComb, Miss.; Memphis (Tenn.) Hospital Medical College, 1908, member of the American Medical Association; died in the McComb Infirmary Oct. 26, 1947, aged 65, of coronary occlusion.

John Hampton Holcomb, Hepburn, Ohio; College of Physicians and Surgeons, Baltimore, 1892; for many years county health officer; died Oct. 23, 1947, aged 81, of coronary thrombosis.

David Isaac Hirsch * Monroe, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1908; formerly vice president of the Louisiana State Medical Society; past president of the Quachita Parish and Fifth District medical associations; past president of the Louisiana Gynecological Society; served during World War I; affiliated with St. Francis Sanitarium and the E. A. Conway Memorial Hospital; for many years president of the city board of health; died Oct. 21, 1947, aged 60, of coronary occlusion.

William Newton Kenzie * Richland, Mich.; Illinois Medical College, Chicago, 1900; served during the Spanish-American War and World War I; for many years affiliated with the

Veterans Administration Facility at Fort Custer; died in Borgess Hospital, Kalamazoo, Oct. 19, 1947, aged 72, of carcinoma of the penis with metastasis.

Oscar Wentworth King ☉ Coral Gables, Fla.; University of Maryland School of Medicine, Baltimore, 1907; member of the Medical Society of the State of New York; specialist certified by the American Board of Ophthalmology; served during World War I; formerly on the staff of the Eye and Ear Hospital in Brooklyn; died Oct. 16, 1947, aged 63, of coronary artery disease.

Otto Marvin La Core, Empire, Mich.; Tennessee Medical College, Knoxville, 1901; Saginaw (Mich.) Valley Medical College, 1902; for many years city physician at Muskegon Heights; affiliated with Hackley Hospital in Muskegon, where he died Oct. 17, 1947, aged 72, of cerebral hemorrhage.

Edward Levy, Brightwaters, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1900; died Oct. 10, 1947, aged 69, of carcinoma.

Mary H. McKee, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1888; for many years attached to the Indian Service; died Oct. 10, 1947, aged 81, of chronic myocarditis.

Elmer Eason McKeown ☉ Denver; Denver and Gross College of Medicine, 1905; member of the American Academy of Ophthalmology and Otolaryngology; specialist certified by the American Board of Otolaryngology; affiliated with St. Luke's, St. Joseph's, Children's and Colorado General hospitals; died Oct. 7, 1947, aged 67, of cerebral vascular accident.

Alfred Lawrence Madden ☉ Albany, N. Y.; Albany Medical College, 1919; associate professor of obstetrics at his alma mater; specialist certified by the American Board of Obstetrics and Gynecology; attending obstetrician and chairman of the staff, Brady Maternity Hospital; died Oct. 18, 1947, aged 51, of coronary thrombosis.

James Rollin Manley ☉ Duluth, Minn.; born in Bellona, N. Y., March 21, 1885; University of Minnesota College of Medicine and Surgery, Minneapolis, 1908; member of the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; specialist certified by the American Board of Obstetrics and Gynecology; affiliated with the Miller Memorial Hospital, St. Mary's Hospital and St. Luke's Hospital, where he died Oct. 21, 1947, aged 62, of coronary occlusion.

Albert Howell Mann, Texarkana, Ark.; Tulane University of Louisiana School of Medicine, New Orleans, 1926; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and the American Medical Association; died Oct. 16, 1947, aged 48, of hypertension.

Charles Hamilton Medders, Still Pond, Md.; University of Maryland School of Medicine, Baltimore, 1894; died Oct. 6, 1947, aged 75, of carcinoma.

Charles Hope Merz, Sandusky, Ohio; University of Wooster Medical Department, Cleveland, 1885; member of the American Medical Association; editor and publisher of the *Sandusky Masonic Bulletin* for many years; affiliated with Providence Hospital and the Good Samaritan Hospital, where he died Oct. 14, 1947, aged 85, of heart disease.

Joseph Arthur Minus, Epes, Ala.; Birmingham Medical College, 1908; member of the American Medical Association; died Oct. 7, 1947, aged 65, of coronary thrombosis.

John Garnet Moir ☉ Deming, N. Mex.; Central College of Physicians and Surgeons, Indianapolis, 1898; vice president of the Mimbres Valley Bank; died Oct. 11, 1947, aged 80, of coronary thrombosis.

Terrell Moody, Washington, D. C.; George Washington University School of Medicine, Washington, D. C., 1923; served during World War I; died in Palatka, Fla., Oct. 25, 1947, aged 50, of heart disease.

Ernest Ivan Mulder, Compton, Calif.; College of Medical Evangelists, Los Angeles, 1920; fellow of the American College of Surgeons; member of the American Medical Association; affiliated with Las Campanas Hospital in Compton and St. Francis Hospital in Lynwood, where he died Oct. 6, 1947, aged 53, of lymphosarcoma.

Augustine Joseph Mulligan, Philadelphia; University of Louisville Medical Department, 1911; served during World War I; on the staff of St. Agnes' Hospital; died in St. Joseph's Hospital Oct. 2, 1947, aged 59, of hemorrhage of the stomach.

Frank Hermann Munkwitz ☉ Milwaukee; Bellevue Hospital Medical College, New York, 1890; also a graduate in pharmacy; member of the medical advisory board during World

War I; on the staffs of Children's Hospital, St. Mary's Hospital and the Columbia Hospital, where he died Oct. 18, 1947, aged 79, of arteriosclerosis.

Frank Thomas Murphy, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; on the staff of Garfield Park Community Hospital; died Oct. 15, 1947, aged 67, of carcinoma of the stomach.

Joseph Leon Page, Philadelphia; Howard University College of Medicine, Washington, 1928; interned at St. Agnes' Hospital in Raleigh, N. C.; died recently, aged 46, of biliary cirrhosis.

Thomas Lloyd Paton, East Paterson, N. J.; College of Physicians and Surgeons, Baltimore, 1887; for many years city physician and medical inspector of public schools; for two years president of the board of health; affiliated with Paterson General and St. Joseph's hospitals in Paterson; died Oct. 6, 1947, aged 94, of hypostatic pneumonia.

Leverett Francis Pelton, Cleveland; Cleveland University of Medicine and Surgery, 1883; died recently, aged 86, of cerebral embolism.

Edwin Thomas Redmond ☉ Brooklyn; Eclectic Medical College, Cincinnati, 1916; for many years on the staff of the Prospect Heights Hospital and the Brooklyn Infants Hospital; died Oct. 8, 1947, aged 54.

Morris Hamilton Reno ☉ Canton, Ohio; Ohio State University College of Homeopathic Medicine, Columbus, 1918; served during World War I; on the staff of the Aultman Hospital; died in East Side Hospital, Pittsburgh, Oct. 26, 1947, aged 56, of injuries received when he fell down the stairs.

William Truman Sharpless, West Chester, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1888; member of the American Medical Association; past president of the Medical Society of the State of Pennsylvania and the Chester County Medical Society; affiliated with Chester County Hospital; died Oct. 19, 1947, aged 91.

Byron Grant Sherman ☉ Morristown, N. J.; University and Bellevue Hospital Medical College, New York, 1921; fellow of the American College of Surgeons; on the staff and president of the medical board of Morristown Memorial Hospital and on the staff of All Souls Hospital; died Oct. 10, 1947, aged 60, of coronary thrombosis.

James Garfield Slater, St. Petersburg, Fla.; Hospital College of Medicine, Louisville, 1904; affiliated with St. Elizabeth's Hospital in Covington, Ky.; died Oct. 26, 1947, aged 65, of coronary thrombosis.

John Robert Thompson Snyder ☉ Altoona, Pa.; Jefferson Medical College of Philadelphia, 1915; fellow of the American College of Surgeons; served during World War I; affiliated with the Altoona Hospital; died Sept. 15, 1947, aged 56, of coronary thrombosis.

Harold Eugene Weller ☉ St. Petersburg, Fla.; University of Pittsburgh School of Medicine, 1916; died Oct. 8, 1947, aged 56.

Charles Edward West, Homestead, Fla.; Chicago Homeopathic Medical College, 1898; formerly a medical missionary; served overseas during World War I; died in a hospital at Nampa, Idaho, Sept. 13, 1947, aged 74, of carcinoma of the stomach.

William Davidson Wheeler, Brookline, Mass.; Tufts College Medical School, Boston, 1918; also a pharmacist; affiliated with Beth Israel Hospital and Boston Dispensary in Boston; died Oct. 10, 1947, aged 57, of coronary heart disease.

Joel Whitaker, Indianapolis; University of Maryland School of Medicine, Baltimore, 1910; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; served on the staffs of Methodist Hospital and St. Vincent's Hospital, where he died Oct. 13, 1947, aged 70, of cardiac failure and pulmonary edema.

William C. F. Witte ☉ Milwaukee; Rush Medical College, Chicago, 1896; fellow of the American College of Surgeons; served as clinical professor of surgery at the Marquette University School of Medicine; for many years affiliated with St. Mary's Hospital, where he died Oct. 10, 1947, aged 78, of coronary thrombosis.

Henry E. Wunder, Shakopee, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1892; member of the American Medical Association; died in Milwaukee Oct. 14, 1947, aged 76, of carcinoma of the pancreas.

Nathan Zommick ☉ New York; Long Island College Hospital, Brooklyn, 1913; died in Beth David Hospital Oct. 13, 1947, aged 63, of arteriosclerosis.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 6, 1947.

The Future of Denominational Hospitals

The intention of the government to take over and administer all the hospitals under the National Health Service is meeting with opposition. A meeting of Roman Catholic physicians and representatives of the managing bodies of Roman Catholic hospitals was held in London. Cardinal Griffin, Archbishop of Westminster, said that the National Health Service Act should be amended to safeguard the rights of denominational hospitals and similar institutions. Some Roman Catholic hospitals were outside the provisions of the act, and others would claim exemption. There must be a guarantee that these should be able to preserve their Catholic nature, have a Catholic management committee and be allowed to admit Catholic patients. Religion has always played an important part in the care of the sick, and nursing is not merely a profession but also a vocation.

Petrol Concessions to Doctors

Among the restrictions imposed by the government in order to deal with the dollar shortage is forbidding the use of automobiles for private purposes, thus reducing the consumption of petrol. But it became apparent that this would impose a hardship on doctors, who differ from other members of the community in that they are normally on call by patients at all times of the day and night. Indeed, they are dependent on their automobiles for a few hours' relaxation from their practices, because the car is part of their essential medical equipment which must be immediately available for an emergency call. Representations were therefore made to the Minister of Fuel and Power by the General Practice Committee of the British Medical Association that a doctor when on call by his patients should be permitted to use his car for any purpose. While recognizing the special difficulties of the doctor, the Minister could not agree that the physician should not be subject to some form of restriction in the use of petrol. But he agreed that if a doctor undertakes a social or recreational engagement and is at that time on call to his patients he should be allowed to use his car. In these circumstances he must be able to justify his action to the police. This he could not do if he had made alternative arrangements for attendance on his patients. The concession was also obtained that petrol may be allowed to doctors for the purpose of attending meetings of the British Medical Association or other professional meetings in their locality.

Bill to Install Refugee Doctors on the Medical Register

In the House of Commons the second reading of a bill for the registration of the foreign refugee doctors, who came here during the war and rendered valuable service to this country in that period of difficulty and danger, was carried with unanimous approval. Mr. Bevan, Minister of Health, said that these doctors, who were allowed to practice here under Defence Regulation 32 b during the war, would be unable to practice after December 31 unless their position were regularized. The bill would do this and put them in the same position as British doctors with the ordinary British qualifications. There would be about 3,500 such doctors when the register was closed, but he did not believe that all would want to remain. It was estimated that between 1,500 and 2,000 would want to avail themselves of the facilities afforded by the bill. Polish doctors brought here under the Polish resettlement scheme numbered

about 200, and it was expected that this figure would have to be increased by the end of the year.

Provision was also made for foreign doctors who served with British forces overseas and who on demobilization had been permitted to enter the country. Special arrangements would have to be made to deal with physicians attached to the Polish forces who could not be in this country before the end of the year. Mr. Bevan proposed to introduce an amendment in committee to enable doctors attached to our establishments abroad to practice in this country. Mr. Bevan added that the medical profession had benefited enormously from doctors who had fled from other countries and had come here. We needed more facilities for postgraduate medical training in this country and in the commonwealth generally.

Supersonic Reproduction on Gramophone Records

For the first time in the history of acoustics frequencies up to 20,000 cycles per second are now being reproduced on gramophone records. Sir Ernest Fisk, managing director of Musical Industries Ltd., announced this as a meeting of the Royal Society of Arts. In terms of electrical reproduction this means that every note and tonal characteristic detectable by the human ear in an original performance can now be heard with equal fidelity from a gramophone record. While the upper frequency response limit of the human ear varies enormously, not only from person to person but according to age, few can detect notes of frequencies higher than about 15,000 or 16,000 cycles a second. The significance of reproduction as high as 20,000 cycles is a safety margin beyond the top limit of human hearing for supersonic transients which affect the tonal character of sounds within the audibility range.

PARIS

(From Our Regular Correspondent)

Nov. 20, 1947.

A New Principle for the Administration of Antibiotics

For six months, Professor Mollaret, at the Claude-Bernard Hospital, has used a new method of treatment (for pyogenic meningitis, septicemia, tonsils phlegmon and the like) consisting in a realization, as rapidly as possible, of the antibiotic concentration without ever reducing the dose, which will render probable the desired sterilization and then an abrupt cessation of administration of penicillin. At the first sign of relapse the treatment is resumed at a double dose. The author has met with success with this method. He is now studying two new technics, one consisting in the administration of a double dose of the antibiotic on the eve of cessation of the treatment, in order to give a finishing stroke to the resisting microbes. He is also trying to obtain a penicillinase, by preference crystallized, for administration to human beings. The research on penicillinase is effected in the laboratory of Professor Trefouel, director of the Pasteur Institute. Hormones, vagomimetics and sympatheticomimetics are substitutive medicaments, with which the point is to cease administering by stages in order to permit the body to regain progressively its equilibrium. To the contrary, anti-infectious medicaments are to be used as radical treatment.

Treatment of Cancer of Esophagus

Nuboer (Utrecht), an advocate of cyclopropane-curare anesthesia in surgery of the esophagus, insists on the necessity of "hydrating" and "proteinizing" the patient and of administering quinine in order to avoid auricular fibrillation in aged patients. The author bewares of the vascularization of the superior part of the gastric tube, after ablation of the tumor. He resects it and performs terminal anastomosis. R. H. Sweet (Boston) sent a beautiful color film of low esophagectomy with esogastric anastomosis; several other films were also presented: one from

John Garlock (New York) on the surgical treatment of cancer of the thoracic esophagus; two from J. Blalock (New York), one on the surgical treatment of stricture of the pulmonary artery, the other on the surgical treatment of aortic stricture; one from Lelio-Zeno (Rosario, Argentina) on prethoracic esophagoplasty; Waltman Walters (Rochester, Minn.) presented a series of radiographic films showing the different conditions of the biliary ducts under the influences of hypertensive or hypotensive medicaments. Xavier Gelle showed one film on the Hallux Valgus operative technic; M. Montant (Paris), another on his technic of esthetic surgery of the breasts; René Charry (Toulouse), on the technic of arthroplasty of the elbow.

The next congress will take place in Paris on Oct. 4, 1948 under the presidency of Jean Fiolle (Marseille), the vice president being Paul Mathieu (Paris).

Painful Limb Stumps

In his study of 1,000 cases Dessaint (Rouen) has noted a striking parallel between the painful rhythms and the course of gastric ulcers. The fact that pain in amputated patients affected with neuroma appears at fixed hours seems to be due to a trouble of the chemical transmission of the nerve impulse, in a bad liberation of acetylcholine and vitamin B₁ against the potassium ion at the very level of the points of transmission, which liberation is impaired by too numerous excitations. For treatment, David, Hecan and Talairach begin with a minimal sympathetic intervention. On account of the progression of pain along the sensitivity tracts up to the cortex cerebri, the isolation of the periphery from the central nervous system is necessary, and this is to be performed at the posterior root by cutting one or two roots only. As regards the phantom limb, they contemplate an intervention on the parietal cortex after a previous electroencephalography; they consider prefrontal lobectomy as an ultimate therapy. Fontaine and Frank (Strasbourg) present their observations on 585 cases. Of 82 per cent of the amputated patients who suffer more or less, only 6 per cent have totally painful stumps, 12 per cent of which are from civil practices, 6 per cent from the first world war and 4 per cent from the second; pain is more frequent in the amputations due to traumatism (14 per cent) than in those due to arteritis (6 per cent). As the best treatment, they consider an intervention on the sympathetic combined with the resection of a bad cicatrix. In place of radiculomedullary interventions that have given only poor results, the authors propose to resort directly to cerebral interventions. Jung (Strasbourg) in his study of 27 patients having an exact notion of their phantom limb has found that the shorter the stump, the longer the phantom. There seems to be a psychic phase to the phantom: its length is constant when at rest and is shortened by the suspension of a weight to the stump, even to the artificial limb, and by infiltration of procaine but is lengthened after a stellate infiltration.

Congress of the French Surgery Association

The fiftieth congress of the French Surgical Association took place Oct. 6 to 10, 1947 under the presidency of Dr. Baumgartner and was attended by a large number of French and foreign surgeons. The United States was represented by Earl Walker (Chicago), Garlock, Blalock and Ramsell (New York), Waltman Walters (Rochester, Minn.) and Hermann (Cincinnati); Argentina by Lelio Zeno, Mirizze and Resano. Among the numerous European countries, Belgium was represented, beside others, by Danis, Mayer, Spehl, Lambotte and Dejardin; Switzerland by Julliard, Decker, Pettavel and others; the Netherlands by Nuboer and Koch. Among numerous personalities at the opening meeting were Professor Hartmann, president of the French Surgery Association, Professor Sarailh, vice chancellor of the university, Professor Binet, dean of the faculty, Dr. Georges Duhamel, of the French Academy, and Dr. Rist, president of the National Academy of Medicine.

Death of Professor P. L. Simond

Professor Simond died at the age of 89 at Valencia (Drôme). He studied microbiology at the Pasteur Institute. In 1896 and 1897 he accomplished important work in Mecknikoff's laboratory on the evolution of parasites. In 1898, while in India to study the great epidemic of plague, then prevalent at Bombay, he delivered the experimental proof of the virus transmission of plague by flea bites from a dying rat to a healthy one, which permitted him to insure the prophylaxis of plague. In 1906 he was appointed vice director of the Marseilles Colonial School, where he taught microbiology; in 1911 he became director of the Constantinople Institute of Bacteriology. He ended his career as chief of the health service of Indo-China from 1914 to 1917. He then retired and devoted himself to social work.

BERLIN

(From Our Regular Correspondent)

Dec. 6, 1947.

The Tuberculosis Situation in Germany

The first peak of the tuberculosis death rate in Germany in this century was reached during World War I. In 1917 it was 32.3 per ten thousand population per annum. Between the two wars the situation improved steadily. An all time low was reached in 1938 with a death rate of 8.2. Exact records for the time of World War II do not exist. Owing to the political situation, even now central German statistics are not available, but local and zonal statistics offer good substitutes. In 1945 the tuberculosis death rate for Germany was as high as 28.6, which about equals the figure of 1919. From then on, the situation has improved to some extent, and the death rate in the fall of 1947 was down to 24.8. But the over-all picture of this year will nevertheless not be favorable, because many more new cases have been reported in the fall of this year than in the corresponding months of 1946. The number of deaths due to tuberculosis all over Germany in 1946 and 1947 is estimated as between 150,000 and 200,000 per year. In Berlin the figure is about 8,000 per year, and Berlin autopsy figures (Koch) for the second half of 1945 and the first half of 1946 reveal 29.9 per cent of tuberculosis cases, with this disease as the only cause of death in 16 per cent.

All statistics and publications disclose the striking absolute and relative increase of extrapulmonary tuberculosis and of its death rate. In this increase participate tuberculosis of the glands, the skin, the abdominal organs, eyes, kidneys, bladder and genitals. Isolated exudative pleurisy has likewise increased. The increase in extrapulmonary tuberculosis is less pronounced in children than in those in the age group 15 to 30 and even 30 to 50 years.

The influx into all four zones of Germany of expellees from other countries, such as Poland and Czechoslovakia, complicates statistics and presents many other problems. The tuberculosis rate among the newcomers is often many times as high as among the old stock local population. This is caused by such factors as the complete disruption of their lives, their bad housing, their lack of local connections at their new domiciles, which puts them at a disadvantage with respect to securing food from extralegal sources, and the lack of friendly neighborliness in the new community. Mostly, their health discipline is bad; many of them prefer to hide their sickness rather than to be reported ill. In their unsettled lives they are afraid of new complications, even at the price of foregoing a possibly higher ration card.

Facilities for diagnosis and treatment of tuberculosis are tragically inadequate. X-ray equipment is extremely scarce; tubes, films and chemicals are lacking. The once famous German x-ray industry is greatly reduced. Hospitals which in former times owned four to six machines are now operating with only one or two. All over Germany, there are more cases of tuberculosis than there are available beds for the tubercular. Consequently,

the well and the sick continue to live together. In small villages scarcely one fourth of deaths due to tuberculosis occur in hospitals, in big cities not more than 40 to 60 per cent. The food ration, though higher than the normal one, is far from being satisfactory. The vitamin deficiency is to some extent reflected in the decided seasonal influence on the tuberculosis death rate. The Eastern zone suffers from a serious lack of physicians trained in the field of tuberculosis, especially the extrapulmonary type. Many positions in this field are vacant and hard to fill.

Because of the long waiting time between diagnosis and hospitalization, caused by the lack of beds, several articles in the German medical press have discussed the problem of how to make best use of this period. There are differences of opinion with respect to ambulant pneumothorax and other collapse operations, but all authors stress the necessity of absolute rest in bed, mainly with a view to caloric saving and the poor fuel situation.

Dr. Paul Troch, director of a tuberculosis clinic in Bad Pyrmont, has invented and is testing a new remedy, consisting of a platinum solution and thorium X. Test tube experiments have been successful against the human, bovine and poultry type of tubercle bacilli. Promising animal experiments are also reported. In man, tuberculosis of the joints and bones seems to respond, while with respect to pulmonary cases final judgment cannot as yet be passed.

Danish physicians have come to Germany in order to assist in the introduction of a large scale BCG inoculation program, which has proved successful in their country. Until the present emergency, BCG inoculations were not popular in Germany after a catastrophe which occurred in Lübeck in 1930, when, during the first large scale BCG inoculation program in Germany, 87 of 250 inoculated Lübeck infants died, while only 76 of the others remained well. It turned out later that a fateful error had occurred: virulent cultures had been used instead of the attenuated BCG. The German press used the catastrophe as a pretext to arouse anti-French, nationalistic feelings. Consequently, the Calmette-Guérin inoculation was discredited in Germany. After this long lapse of time, Berlin is now starting a program of large scale BCG inoculations, undertaken on a voluntary basis. The first few hundreds of volunteers will be inoculated this month. After that, wholesale inoculations are planned to be performed in 1948 and 1949. The preferred age groups will be 3 to 6 years and 15 to 20 years. Inoculation material will be provided from Denmark and from Paris.

New Soviet Tuberculosis Law

The Soviets recently passed a new tuberculosis law (Order 297 of the Soviet Military Administration) which organizes the fight against tuberculosis on a zonewide basis. In view of the present inadequate facilities, however, the law is envisaging a goal rather than establishing a workable practice. The whole scope of tuberculosis care will be concentrated in social-medical centers (Fürsorgestellen) which have the following tasks: (1) collection of data on all active cases of tuberculosis; (2) examination and registration of all patients; (3) welfare work; (4) supervision of the working conditions of patients; (5) treatment in the Center; (6) supervision of patients under treatment by private physicians, and (7) hygienic enlightenment. Different from the old Prussian law, not only infectious cases are made subject to registration but all active and suspicious cases, whereby "active" includes all clinical and radiologic indications, aside from simple scars. This procedure is intended to put the tracing of the sources of infections on the largest possible scale. The law calls for preliminary physical examinations and regular roentgen ray check-ups on all food handlers, teachers, doctors, etc. Youths are excluded from tuberculosis hazardous occupations. In individual cases examination, treatment and isolation can be made compulsory. Children may be removed from their surroundings in cases in which their stay there would involve exposure to tuberculosis.

Convention of Internists

Under the chairmanship of Professor Volhardt, Frankfurt, and Professor Siebeck, Heidelberg, the first postwar convention of internists from Southwestern Germany was recently held at Karlsruhe. The main topic for discussion was diseases of the heart, particularly the connection between functional and nervous disturbances and the advances in electrocardiography. Professor Heilmeyer, Freiburg, reported on therapeutic progress during the last few years, with specific reference to sulfonamide drugs and penicillin.

Miscellaneous

Among the 1,800,000 refugees and expellees now living in Bavaria are 1,200 physicians and 300 dentists. The Bavarian Landtag passed a resolution enabling them to practice in the state.

The University of Giessen, the only university in Germany without a medical faculty, has developed plans for the reconstruction of its largely destroyed facilities. As part of this program, the establishment of an independent faculty for nutritional research, patterned after American fashion and attached to the Justus Liebig Hochschule, is planned. This faculty will devote itself largely to the problems of vitamin research.

Professor Lange, dean of the medical faculty of Greifswald (Soviet zone) and director of its Anatomic Institute, and Dr. Dragendorff of the same university were recently arrested for unknown reasons.

The famous pediatrician of Munich University, Professor Meinhard von Pfaundler, died at the aged of 75. He was one of the founders of modern pediatrics and was honorary president of the German Pediatric Society. His widely known "Handbuch der Paediatric" has been translated into many languages.

The Berlin epidemic of poliomyelitis has practically come to an end. All restrictions ordered by the Military Government for the protection of the American community have been lifted as of Nov. 12, 1947.

BRAZIL

(From Our Regular Correspondent)

SÃO PAULO, Dec. 2, 1947.

The Penal Code

Professor Flaminio Favero has commented on and clarified our penal code. He dealt with the clandestine sale of drugs. He made a historical analysis of the trade in poisonous substances, since the code of 1850 up to the present detailed Brazilian legislation, and compared it with Italian jurisprudence (Manzini). For the legal and medical concepts of drugs he gave valuable explanations of international laws on the manufacture and distribution of drugs, to which Brazil has given her support. Professor Favero analyzed the legal regulations in Brazil and, finally, the penal action against the agent, chemist, doctor or dentist. According to Italian law, the act of prescribing noxious substances is aggravated by "the condition of infirmity or the psychic deficiency" of the patient or by his being "given over to the use of drugs." While these were not included in the Brazilian code, they should not fail to constitute an infraction.

Investigation of Paternity

Luiz Silva, professor of legal odontology in the São Paulo Police School, presents in outline the bases for the scientific examination of "heredity likenesses." He comments on methods used before and after Mendel in the investigation of paternity through "hereditary characteristics" and concludes that they have disappeared since the advent of modern legal odontology, which has substituted subjective processes for objective ones, based on the principles of the laws of mathematics applied to biology.

Correspondence

HYPERTENSION

To the Editor:—A wrong impression may be created by the remark in the editorial of November 1 (*THE JOURNAL*, p. 576), that "sodium depletion also has morbidity and even a mortality." Nobody is known to have died from the salt-free treatment of hypertension. The symptomless toleration of a diet which would be rapidly fatal to normal persons is in itself evidence of a vascular abnormality and probably of a need for the diet. The symptoms of sodium deficiency in exceptional cases are too obvious to be overlooked, are quickly and easily corrected and are usually transitory, so that the commonest error will consist in giving too much salt and for too long a time. There is an absolute difference from the mortality and sequels which may follow surgical sympathectomy in spite of care or skill.

Reference is made to the precipitation of uremia by withdrawal of salt in a type of nephritis which is so uncommon that Thorn, Koepf and Clinton (1944) believed their 2 cases to be unique in the literature. As usual, notice has not been taken of the 6 cases of this kind in our series (Allen, F. M., and Sherrill, J. W.: *Treatment of Arterial Hypertension, J. Metabolic Research* 2:429-545 [Oct.] 1922). The treatment by addition of 2 to 10 Gm. of salt is summarized in the tables of this paper, and in greater detail in case 3 of an earlier article in *THE JOURNAL* (Allen, F. M.; Mitchell, J. W., and Sherrill, J. W.: *The Treatment of Combined Diabetes and Nephritis, J. A. M. A.* 75:444-449 [Aug. 14] 1920). Our cases did not reach the collapse stage, which is not adrenocortical deficiency but simple shock, well known to be produced by sodium deficit, whether resulting from traumatic exudation, peritoneal irrigation with distilled water or various other causes. The specific remedy, of course, is administration of sodium salts, as in all shock. The precipitation of uremia in these cases is connected with the loss of concentrating power, so that polyuria is necessary for nitrogen elimination; however, the drinking of water alone causes nausea, and both drinking and diuresis are possible only with a sufficient supply of salt. With a diet as low as feasible in both protein and salt these patients may be kept in fair condition for a few months or years, but the ultimate prognosis is hopeless because of the impossibility of the requisite functional rest.

Various authorities who long denied any effect of salt-free diet have now receded to the position that the benefit is symptomatic and temporary, the judgment in each instance being based on brief inadequate experience. I am still alone in claiming an influence on the disease itself, different from a mere artificial reduction of blood pressure and often evident in long observation even of "refractory" cases showing little or no change in pressure. This contention that the improvement is specific and that progressiveness is arrested was apparently not established convincingly by our large published statistics, because of the variability of cases. However, it may appear significant that in an experience now covering thirty years and several thousand cases I have never seen an essential hypertension patient who on beginning treatment was free from obvious retinitis, angina, uremia or congestive heart failure and who acquired any of these conditions under continued treatment or ever needed mutilating surgery. These results in cases which were mostly rather advanced on beginning treatment should offer hope for reducing the huge mortality due to hypertension by the rational plan which is used in all other diseases, namely, diagnosis and correct treatment at the earliest possible stage. This problem and mortality are important enough to justify placing on record this new issue of accuracy between an individual declaration and the opposition of all the reputed authorities.

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SICKNESS INSURANCE IN AUSTRIA

To the Editor:—I just read an article which appeared in the Austrian edition of the *Austro-American Tribune* of October 1947. (This attacks the American Medical Association for opposing compulsory sickness insurance.—Ed.)

Austria is the classic country of sickness insurance; everybody is insured, even the highest government officials, professors of universities, general directors and, in fact, all those with the highest salaries. As a physician who has practiced for twenty years I have been able to form an opinion about sickness insurance, even though in the beginning I was in favor of such insurance. Permit me to congratulate you that in the United States you do not yet have sickness insurance. I congratulate not only you but also the American people who are gaining by the fact that as yet there is no socialized medicine. Every medical service suffers when it has to be done under restrictions, and this is always the case under government-regulated sickness insurance. If one considers the enormous expenditures for the administrative personnel, the huge buildings that are necessary and, in short, all the complicated machinery that is necessary for the conduct of government-supervised sickness insurance, it can be said that this money would be spent better if it were used to really cure the patients.

Be glad that you can still treat human beings, individuals, that you do not have to collect insurance papers, that you can devote your time to your patients and do not have to waste it keeping records that are needed for the insurance but contribute nothing to the cure of the patient.

Be content to remain, as the article in the *Austro-American Tribune* expressed it, "narrowminded and shortsighted." Use all efforts to retain your freedom and preserve for the American people the good physician.

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Medical Motion Pictures

FILM REVIEW

Peptic Ulcer. 16 mm., color, sound, 1,600 feet (one reel), showing time forty minutes. Prepared in 1942 by the Lahey Clinic, Department of Gastroenterology, Boston. Procurable on loan from: Wyeth Inc., Film Library, 1600 Arch Street, Philadelphia 3.

This film presents peptic ulcer, including the incidence, pathogenesis, diagnosis, treatment, pathology, complications, gastric ulcer and surgery.

It describes in detail the various forms of accepted therapy and the use of the various antacid preparations. It lacks references to the complication, namely, the constipation that sometimes confronts the clinician when antacid is used. The treatment of the various complications of peptic ulcer such as alkalosis is well presented. The hospital management of the ulcer patient may be overemphasized in the film, since at present many gastroenterologists are treating the ulcer patient whenever possible by an ambulatory regimen.

The gross and microscopic pathology is well illustrated.

Although the film is longer than average, it gives a complete and rapid review of the facts about peptic ulcer and is essentially accurate in detail. Various methods of visual presentation including animation, charts, graphs, drawings, radiographs and photomicrographs are used to excellent advantage in this film.

This film is suitable for showing before members of medical societies, senior medical students, residents and general practitioners.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals, for Profit: Burns—Application of Doctrine of Res Ipsa Loquitur.—The plaintiff sued for damages for burns suffered by her at the time she was born, the burns having been the result of the alleged negligence of the defendant hospital. From a judgment in favor of the plaintiff, the hospital appealed to the Supreme Court of Appeals of Virginia.

The plaintiff's mother was admitted to the defendant hospital March 14, 1942, and the plaintiff was born during the night of March 17. It was a hard birth, but the plaintiff was normal and without any injuries. The next day the physician who performed the delivery was told by the nursery nurse that the baby had a blister. On examination he found a burn on the baby's thigh about as big as a silver dollar, which in his opinion was caused by a hot water bottle. He said that it was a very common practice in a hospital to wrap up one or two hot water bottles and put them on either side of the baby to get the proper heat; if that was done in a proper way there would be no burn. On cross examination the physician stated that at birth the baby had a blue tinge and very likely had been given oxygen and that this baby could have been put in a resuscitator bassinet for that purpose. He stated that he was in the delivery room until the plaintiff's mother was moved to her room, which was not more than half an hour from the time of the delivery. It was possible, he said, for the baby to have been in the bassinet for that period and then to have been taken immediately by the nurse to the nursery without any order from him. He did not consider it reasonably possible that the blister could have been caused several hours before he examined it in the nursery the next morning, and he did not see how it was possible for the burn to have been received in the resuscitator bassinet. It did not seem reasonable that a burn from the bassinet would be limited to just one spot; all the time that it had been used he had never heard of a baby's being burned; and "with at least four people in that small delivery room, with a baby that we thought necessary to look after enough to put it there, I don't think it could possibly be put on that iron grill without us knowing something about it; and I also think that if it was blistered we would see it—not the next morning." The plaintiff's mother was not told about the burn until a week later, just before she went home from the hospital. The superintendent, Mrs. Stein, then told her that she did not know how it happened, whether it came from hot water bottles or not, but that it happened in the nursery on the morning after the child was born. She said she was notified of the accident by a nurse—she did not know which one—late in the morning after the baby was born; that she made an investigation but never did find out how the child was burned; that she remembered three nurses who were on night duty then but did not remember which one was in charge of the delivery room. She questioned the nurses, and they said that they did not know how the accident happened; any one of the three could have put the hot water bottle with the baby, but she did not know which one took charge of the baby, and they did not admit to her which one did.

The hospital's chief contention on appeal was in relation to an instruction given by the trial court, which gave the plaintiff the benefit of the doctrine of *res ipsa loquitur*. A private hospital, said the court, owes to its patients such reasonable care and attention for their safety as their mental and physical condition, if known, may require. The care to be exercised should be commensurate with the known inability of the patient to take care of himself. In a proper case, the court continued, a plaintiff may be aided in establishing a breach of such duty by a legal inference of negligence from proved facts. He may show a situation to which the *res ipsa loquitur* doctrine applies. Generally speaking, that doctrine applies in negligence cases where the instrumentality which caused an injury is within the exclusive possession and control of the person charged with negli-

gence, and where such person has, or should have, exclusive knowledge of the way that instrumentality was used, and where the injury would not ordinarily have occurred if it had been properly used. We have, the court pointed out, held that the doctrine was not to be applied in malpractice cases primarily because as a matter of common experience and knowledge a bad result affords no presumption of negligence. The physician or surgeon does not warrant a cure, and an unfavorable result may be, and often is, attributable to one or more factors for which he is not responsible and may happen notwithstanding the exercise of a very high degree of care and skill. On the other hand, the court said, there is no good reason why the application of the rule should be limited to cases involving a particular activity, such as cases of injury to railroad passengers by derailment. Referring to a California case in which the patient alleged that she was burned on the legs by a hot water bottle while she was unconscious from an anesthetic, the court quoted: "The doctrine *res ipsa loquitur* is properly applied to the facts of this case. The patient was unconscious. Under its contract with her the defendant corporation owed her a duty of protection, which was violated by the use of an instrumentality which produced the painful results which were made manifest when she came out from the influence of the anesthetic. Proof of the accident carried with it the presumption of negligence." And in another California case it was said: "Plaintiff was rendered unconscious for the purpose of undergoing surgical treatment by the defendants; it is manifestly unreasonable for them to insist that he identify any one of them as the person who did the alleged negligent act."

On the evidence produced in this court, the court of appeals said, the accident would not have happened but for the negligence of the defendant's employees. It resulted from the use of instrumentalities under the control of the defendant and to a helpless patient also in the possession and under the exclusive control of the defendant. Plaintiff was powerless to ascertain why and how it happened. If it happened without the negligence of anybody, contrary to ordinary experience, the defendant could have presented evidence so to indicate or establish. None was produced, and it was proper to tell the jury that an inference existed in favor of the plaintiff in the absence of any explanation by the defendant.

Accordingly the Supreme Court of Appeals held that the trial court's instruction with reference to the doctrine of *res ipsa loquitur* was proper and that the judgment in favor of the plaintiff should be affirmed.—*Danville Community Hospital, Inc. v. Thompson*, 43 S. E. (2d) 882 (Va., 1947).

Paternity: Rh Factor in Cases of Questioned Parenthood.—This case, involving the paternity of a child born some ten or eleven weeks after the parties hereto were married, was heard in the domestic relations court of the City of New York, family court, Kings County, New York.

The presumption of legitimacy, said the court, of a child born in wedlock is as strong as any known to the law, but it may be overcome by competent and convincing proof. Under the Lord Mansfield Rule the illegitimacy of a child could not be testified to by his parents. In the absence of testimony bearing directly on the paternity of the child, the court would not be authorized to make a finding contrary to and in contravention of the Lord Mansfield Rule. There is, however, said the court, testimony bearing directly on the question as to whether or not the respondent herein is the father of the child. The parties and the child submitted to blood-grouping tests. It would appear that under two recognized blood-grouping tests the blood of the parties, including the child, was compatible. Compatibility of blood does not *ipso facto* determine paternity. When the blood of the parties and the child is incompatible the alleged father, by reason of such incompatibility, may be excluded.

The respondent contends that, despite the compatibility of the blood under the A-B and M-N blood-grouping tests, he is not the father of the child. Extensive testimony was given by Dr. Alexander S. Wiener. The conclusion reached by Dr. Wiener, as the result of the Rh or Hr test, was that the respondent herein is not the father of the child, and his conclusion was definite. His testimony on that score remains unchallenged.

Dr. Wiener testified: "There are two kinds of Rh and two kinds of Hr, and by studying these cases we were able to obtain serums from them which we can use to identify these various Rh and Hr's." Further on in his testimony the physician stated, in answer to a question by the court: "If you visualize a red cell as a bag containing the hemoglobin, the outside envelope has to have a structure, and that structure is like a patchwork, like a crazy quilt, a patch here, a patch there. Now these patches we cannot chemically identify, but apparently each has a separate structure so that a special serum will hook on to the patch and clump it. Now one type of patch determines the A and B; a different kind of patch determines the M and N, and the third type of patch determines the Rh and Hr." It is evident that the determination of the type of blood is fixed by the serums used. Nowhere, said the court, is there a judicial determination anent the Rh blood-grouping test. However, the medical fraternity has in no uncertain terms expressed itself in an editorial published in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* (125:495 [June 17] 1944) as follows:

In view of these family data, as well as the results obtained in the study of mother-child combinations and the statistical analysis of data on the distribution of the Rh blood types, the theory of six allelic genes appears to be firmly established. Therefore, the medico-legal application of the Rh blood types in cases of disputed parentage is justified, provided suitable potent reagents are available. The use of the Rh tests in such cases, with the A-B-O groups and M-N types, raises the chances of excluding parentage from about 33 per cent to almost 45 per cent.

Dr. Wiener's testimony and his conclusions, evidently arrived at since 1944, are that 55 per cent are definitely excluded under the Rh blood grouping tests. Cross examination of Dr. Wiener did not in any wise change his conclusions. No testimony was admitted by the petitioner in an effort to impeach the doctor's credibility or his ability and standing as a physician or to negate his conclusion. The courts cannot without basis discard the testimony of a reputable and competent witness who has testified under oath.

Under section 126-a of the domestic relations law and section 34 of the domestic relations court act, testimony on blood tests is admissible in evidence, and such testimony is to be given the same consideration as any other type of testimony. If such testimony is believable, the court cannot reject it. In this case, as in every other instance, evidence must control. Whatever the sentiments of the court may be, it cannot make compromise with what the facts dictate. The proceeding must be determined on the testimony adduced and the facts established. On the testimony and on the facts established, concluded the court, I must find that respondent is not the father of the child.—*Saks v. Saks*, 71 N. Y. S. (2d) 797 (N. Y., 1947).

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARD OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL* Jan. 10, page 130.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II*. Various centers, June 21-23. *Part II*. Various centers, April 26-27. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral*. New York, April 12-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral*. Philadelphia, April 2-4. Final date for filing application is January 19. *Written*. Group B. Various centers, Feb. 16. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral*. San Francisco, April. Chicago, June. Final date for filing application is Feb. 1. *Written*. Oct. 18. Final date for filing application is June 1. Asst. Sec.-Treas., Dr. W. A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral*. Chicago, May or June. Final date for filing application is Feb. 1. Sec., Dr. W. J. German, 310 Cedar St., New Haven, Conn.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral*. Baltimore, May. Chicago, Oct. Sec., Dr. S. Judd Beach, 56 Ivie Road, Cape Cottage, Me.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral*. Chicago, June 16-19. Final date for filing application is Feb. 1. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Philadelphia, March 8-10. Final date for filing application is March 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis, Mo.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in April and November of each year in the home town of applicants. Sec., Dr. Robert H. Ivy, 1930 Chestnut St., Philadelphia.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral*. Washington, D. C., May 13-15, 1948. Final date for filing application is Feb. 15. Sec., Dr. F. J. Bracecland, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral*. Chicago, June 1948. Final date for filing application is March 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

Miscellany

MEDICAL SUBJECT HEADINGS

Under the auspices of the Army Medical Library a two day symposium on Medical Subject Headings was held in Washington, D. C., Dec. 12 and 13, 1947. The symposium was built about two objectives, to explore the approaches used by medical indexers and medical librarians to the related problems of printed bibliographies and card catalogs, and to determine principles which might be acceptable to both groups in their selection of new medical terminology for bibliographic purposes.

The participating members included Magdalene Freyder, American Medical Association; Murrell C. Wellman, American Dental Association; Eileen R. Cunningham, Medical Library Association; Estelle Brodman, Columbia University Medical Library; Dr. Claudius F. Mayer, Army Medical Library; Irene M. Strieby, Lilly Research Laboratories; Janet Doe, New York Academy of Medicine; Dr. Sanford V. Larkey, Welch Medical Library; D. J. Haykin, Mortimer Taube, Sarah G. Mayer, C. W. Gull, Morris C. Leikind and Leo E. La Montagne of the Library of Congress; Mabel McLaughlin and Miriam M. Wilson of the Veterans Administration; Dr. Helen W. Kaan, Dr. D. L. Ballard and Michael J. Filippi of the National Research Council; Ruth Griffin and Ruth E. Rodier, Naval Medical Center; Clara Manson, College of Physicians of Philadelphia; Mary Louise Beitzell, Social Security Administration; Dorothy M. Cramer, National Institute of Health; Dr. Thelma B. Dunn, National Cancer Institute; Margaret C. Schindler, Department of Agriculture; Wyllis E. Wright, Williams College, and representatives of the Army Medical Library.

Following the reading of papers, discussion developed around the following themes:

1. The problem of adapting medical subject headings to a changing nomenclature. Although the core of medical terminology, as represented by adopted headings in a printed list or card catalog, is relatively stable, day to day use in international medical literature constantly establishes new terms. Subject headings used for periodical literature are particularly susceptible to such change.

2. The lack of a standard list of subject headings for the medical sciences. Catalogers and indexers must borrow from whatever source they can find. The participants in the symposium passed a resolution urging the creation of such a standard list.

3. Direct or indirect headings, involving the extent of alphabetical classification desirable in a list of subject headings. Reconsideration of classed catalogs was suggested by several participants. The general principle of direct (nonclassified) headings, as well as that of specificity, was reaffirmed.

The symposium was concluded by the adoption of a list of principles to be used in the selection of subject headings for medical literature.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

American Journal of Medical Sciences, Philadelphia

214:349-464 (Oct.) 1947

- *Methylthiouracil in Treatment of Thyrotoxicosis. A. Barfred.—p. 349.
- *Effect of Lumbodorsal Splanchnicectomy on Blood Volume and "Thiocyanate Space" of Patients with Essential Hypertension. E. D. Freis and R. H. Smithwick.—p. 363.
- Fluorescein Studies in Peripheral Vascular Disorders. D. W. Kramer and E. B. Abramson.—p. 368.
- Antidiuretic Effect of Morphine and Demerol in Congestive Heart Failure. M. I. Ferrer and L. Sokoloff.—p. 372.
- Failure of Streptomycin in Treatment of Leprosy. T. D. Cuttle.—p. 385.
- Psittacosis: Report of Outbreak. A. D. Rubenstein, D. W. Drew and A. G. Law.—p. 399.
- *Experiences with Antireticular Cytotoxic Serum (ACS) in Arthritis. B. Rogoff, R. H. Freyberg, H. M. Powell and R. M. Rice.—p. 395.
- Glycogen Storage (Von Gierke's) Disease Predominantly Involving the Heart: Report of Case with Histochemical Phosphatase Studies. M. Wachstein.—p. 401.
- Studies of Cryoglobulins: I. Unusual Purpura Associated with Presence of High Concentration of Cryoglobulin (Cold Precipitable Serum Globulin). A. B. Lerner and C. J. Watson.—p. 410.
- Id.: II. Spontaneous Precipitation of Protein from Serum at 5 C. in Various Disease States. A. B. Lerner, C. P. Barnum and C. J. Watson.—p. 416.
- Hepatic Calculi. A. Bassler and A. G. Peters.—p. 422.
- Studies of Hepatic Function in Pulmonary Tuberculosis. A. Hurst, H. M. Maier and S. A. Lough.—p. 431.
- Esophageal Varix: Report of 115 Cases. W. H. Higgins Jr.—p. 436.
- Action of Penicillin on *Typhimurium* Palidum. H. Bee-man.—p. 442.
- Patient's Plight, Doctor's Despair—The Common Cold. N. D. Fabricant.—p. 458.

Methylthiouracil in Thyrotoxicosis.—Barfred treated 61 patients with thyrotoxicosis, 51 women and 10 men between the ages of 18 and 72 years, with 4-methyl-2-thiouracil. Eighteen patients were given large doses of methylthiouracil. The average dose was 1.2 Gm. daily. The drug had to be discontinued in 8 instances, and it caused reactions in 14 patients. A smaller average dose of 0.57 Gm. was given to 43 patients. In this group the drug had to be discontinued in 5 instances; reactions were caused in 20 patients. Agranulocytosis occurred in 1 of these latter patients who had recovered. The largest single dose recommended is 0.4 Gm. daily. If this does not give any results for the first seven or eight weeks, it is justifiable to wait two or three weeks more for a drop in the basal metabolic rate. In 44 of the 61 patients it was possible to complete the treatment. They were fully capable of work in an average of 1.2 months after treatment was started. Sustained remission with an average observation period of seven and one half months occurred in 16 patients after treatment of approximately five months' duration. The sustained remissions occurred most frequently in patients with a small to moderate sized goiter in the young and middle-aged groups, especially in men, and in cases in which the disease had not been of long duration. The complications and the severity seemed to have no significant influence on the ultimate result of the treatment. Four patients were failures. In 18 iodine-resistant patients treated with methylthiouracil the basal metabolic rate fell much more slowly than usual. The common incidence of a positive urobilin test in association with other untoward reactions suggests that this test represents a toxic manifestation; the addition of this simple check-up is recommended. Methylthiouracil is ineffective in cases of increased basal metabolic rate caused by acromegaly. Methylthiouracil seems to be more effective than thiouracil and about as effective as propylthiouracil.

Lumbodorsal Splanchnicectomy.—Freis and Smithwick made repeated blood and "available fluid" determinations on a series of 10 patients, 8 men and 2 women between the ages of

21 and 45 with essential hypertension, for periods up to six months following lumbodorsal splanchnicectomy. The "available fluid" volume expresses the total volume in which a 5 per cent solution of sodium thiocyanate is distributed, including the plasma volume, the amount that enters the red cell and its distribution in the extracellular space. The total blood volume was reduced in 9 cases in the period of eight days to two weeks following surgical intervention, due primarily to a diminution in red cell volume. Despite a continued reduction of blood pressure the total blood volume was restored to the approximate preoperative level at the end of six months following the operation. A slight reduction of the hematocrit value persisted, the deficiency being made up by a compensatory increase in plasma volume. Coincident with the reduction in blood volume noted in the second postoperative week there was an increase in "available fluid" volume. This increased value was restored to the preoperative level over a period of several months. Previous observations that the total blood volume is within normal limits in patients with essential hypertension were confirmed. In relation to surface area the "available fluid" volume of patients with hypertension was also observed to be within the normal range. It is suggested that the reduction in blood pressure following sympathectomy is not dependent on changes in total blood or "available fluid" volume.

Antireticular Cytotoxic Serum in Arthritis.—Rogoff and his co-workers produced arthritis in rats by the injection of pleuropneumonia-like organisms. One group of animals served as untreated controls. Of a second group some rats were injected with normal rabbit serum, while the test animals received patent homologous antirat antireticular cytotoxic serum (ACS) before inoculation with the organisms. A third group of rats received injections of ACS simultaneously with the inoculation of pleuropneumonia-like organisms and repeated serum injections on the third and sixth day. The polyarthritis induced in rats by the inoculations was not affected in time of onset or severity by the use of the antireticular cytotoxic serum either prophylactically or therapeutically. Twenty-nine patients with rheumatoid arthritis were given subcutaneous injections of ACS at intervals of three or four days. The doses varied originally from 0.5 to 1.5 cc. and were reduced later to 0.3, 0.6 and 0.9 or 1 cc. After intervals of four to six weeks many patients received a second series of injections, some a third and several a fourth series. Fourteen patients were injected with normal rabbit serum having no antireticular cytotoxic activity. Three patients who received ACS showed symptomatic improvement and 3 showed objective improvement; in 16 there was no change and 7 became worse. Of the control group 1 patient improved symptomatically, 2 objectively, 7 revealed no change and 4 became worse. ACS treatment was of no benefit in the great majority of patients with rheumatoid arthritis. In the few patients who experienced improvement it was only temporary. There was no dependable effect of the antireticular cytotoxic serum on the clinical course of rheumatoid arthritis.

American Journal of Ophthalmology, Cincinnati

30:1205-1343 (Oct.) 1947

- Development of Ectodermal Framework of Optic Nerve, with Especial Reference to Glial Lamina Cribrosa. H. C. Haden.—p. 1205.
- Streptomycin in Ophthalmology. J. G. Bellows and C. J. Farmer.—p. 1215.
- Operative Technique of Vitreous Replacement. M. H. Fritz, Theresa M. Fennessy and H. Cabrera.—p. 1221.
- Bilateral Granulomatous Uveitis from Use of Horse Serum in Rabbits. T. F. Schlaegel Jr.—p. 1225.
- Stimulation of Corneal Epithelialization with Topical Application of Erythrocytes: Experimental Study. F. W. Newell.—p. 1238.
- Effect of Di-Isopropyl Fluorophosphate on Capillaries of Anterior Segment of Eye in Rabbits. L. von Sallmann and Beatrice Dillon.—p. 1244.
- Transfer of Ascorbic Acid and Related Compounds Across Blood-Aqueous Barrier. V. E. Kinsey.—p. 1262.
- Statistical Study of Glaucoma. J. C. Holst.—p. 1267.
- Diagnosis of Early Glaucoma. H. W. Grant.—p. 1276.
- Dissatisfied Refraction Patient. C. A. Veasey Jr.—p. 1286.
- *Bilateral Ophthalmoplegia in Acute Anterior Poliomyelitis. E. S. Wright.—p. 1294.

Bilateral Ophthalmoplegia in Poliomyelitis.—Wright reports the history of a woman, aged 24, who entered the hospital on September 18, 1946, complaining of dizziness, diplopia, vicelike headache and nausea. Slight nausea and dizziness had

been present for five days prior to admission, but diplopia occurred on the day of admission. Six days later there was noted bilateral ptosis and weakness of the muscles of the back and of the extremities. Two weeks after the onset ophthalmoplegia was complete in both eyes. A left seventh nerve paralysis had developed, which resulted in inability to close the left eye. Voiding had also become difficult. The lesion of the facial nerve then slowly regressed. Eight weeks after onset, the pupils had returned to normal and accommodation was sufficient to read 8 point type at 13 inches unaided. Convergence remained nil. A severe weakness of all muscles of both hands remained. Six months later the right medial rectus was functioning; the left medial rectus was paretic, and scarcely any motion had returned to the vertical muscles. Convergence was nil and the wrist and foot drop remained severe. Diplopia was an early symptom in this patient, and extraocular muscular involvement was prominent well in advance of spinal cord symptoms.

American Journal of Physiology, Baltimore

150:523-778 (Oct.) 1947. Partial Index

- Examination of Factors Which Alter Glomerular Activity in Rabbit Kidney. R. R. Forster.—p. 523.
Effect of Ether and Pentobarbital on Polarisation State of Central Nervous Elements. A. van Harreveld.—p. 541.
Effects of Vitamin Imbalance Under Conditions of ad Libitum Feeding and Reduced Caloric Intake. Virginia H. Brunish, H. B. McWilliams, G. D. Mason and others.—p. 551.
Refractive Charges Produced by Injection of Fluids into Vitreous Humor. A. Layton, M. W. Morgan Jr. and J. M. D. Olmstead.—p. 568.
Electric Characteristics of Injuries to Heart Muscle. J. A. E. Eyster and W. E. Gilson.—p. 572.
Hyperglycemia Induced by Action of Adrenalin on Central Nervous System. A. Leimdorfer, R. Arana and M. H. Hack.—p. 588.
Relative Activity of Wrist Moving Muscles in Static Support of Wrist Joint: Electromyographic Study. W. T. Dempster and J. C. Finerty.—p. 596.
An Experimental Study of Explosive Decompression Injury. E. L. Corey.—p. 607.
Effect of Aloxan on Muscle Glycolysis. C. L. Gemmill.—p. 613.
Relation of O₂ in Bone Marrow Blood to Post-Hemorrhagic Erythropoiesis. W. C. Grant and W. S. Root.—p. 618.
Influence of Environmental Temperature and Posture on Volume and Composition of Blood. C. R. Spearman, M. Newton and R. L. Post.—p. 628.
Effect of Pulmonary Vascular Congestion on Distensibility of Lungs. I. Mack, M. Grossman and L. N. Katz.—p. 654.
Mechanism of "Spontaneous" Re-Innervation in Paretic Muscles. A. van Harreveld.—p. 670.
Blood Uric Acid and Allantoin of Rat After Nephrectomy and Hepatectomy. S. O. Byers, M. Friedman and M. M. Garfield.—p. 677.
Ischemic Compression Shock: Influence of Body Temperature and of Temperature of Traumatized Tissues. E. L. Lipton, A. B. Denison and H. D. Green.—p. 693.
Analysis of Carotid Si Cardiovascular Reflex Mechanism. S. C. Wang and H. L. Borison.—p. 712.
Energy-Rich Phosphate Supply of Failing Heart. A. Wollenberger.—p. 733.
Distribution of Esterase in Lymph from Various Regions and in Relation to Lymphoid Tissue. R. W. Brauer and Esther Hardenbeigh.—p. 746.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

58:391-542 (Oct.) 1947

- *Transitory Focal Pulmonary Edema and Eosinophilia (Löfller's Syndrome). A. T. Henderson and C. B. Peirce.—p. 391.
Pulmonary Infiltrations on Routine Chest Roentgenograms. L. Hyde and B. Hyde.—p. 407.
Roentgen Demonstration of Calcifications in Interventricular Septum in Cases of Heart Block. F. Windholz and C. Grayson.—p. 411.
Umbilic as Substitute for Barium in Roentgen Study of Acute Intestinal Obstruction. J. T. Case.—p. 422.
Roentgen Findings in Primary Duodenal and Paraduodenal Malignant Lesions. J. R. Kline and G. J. Culver.—p. 425.
Extrinsic Lesions Affecting Rectosigmoid. R. H. Marshak.—p. 439.
Sigmoidovesical Fistula: Review of Literature and Report of Case Demonstrated by Barium Enema. T. F. Leigh.—p. 451.
Calcified Appendiceal Fecal Concretions in Childhood: Report of 8 Cases. A. E. Child.—p. 455.
Studies on Bone Marrow in Vitro: IV. Effect of Roentgen Rays on Explanted Bone Marrow. M. Rachmilewitz, A. Rosin, G. Goldhaber and L. Doljanski.—p. 464.
*Fibrous Dysplasia of Bone. F. B. Bogart and A. E. Immler.—p. 478.
*Treatment of Cancer of Bladder by Radium Needles. M. Lenz, G. F. Cahill, M. M. Melicow and C. P. Donlan.—p. 486.

Pulmonary Edema and Eosinophilia.—Henderson and Peirce report 1 case of transitory shifting pulmonary shadows associated with pronounced fluctuating blood eosinophilia (Löfller's syndrome) in an allergic man aged 42. The patient's personal and family history bore evidence to his allergic predisposition. In addition to house dust and ragweed pollen, the patient also exhibited evidence of bacterial allergy to the infect-

ing organism, *Hemophilus influenzae*, which was observed constantly in the sputum and in infected sinuses. At a later period, on readministration of the specific vaccine, there developed joint and muscle pains, fever and pronounced purpura of the Schönlein type, and during this episode a transitory bundle branch lesion was revealed by the electrocardiogram. This indisputable evidence of vascular allergy is corroborative of the view that the Löfller shadows are due to allergic edema of the interalveolar pulmonary tissue with its widespread capillary connections.

Fibrous Dysplasia of Bone.—Bogart and Immler report 4 cases of fibrous dysplasia of bone confirmed by biopsy in 3 young men between the ages of 18 and 29 and in a boy aged 12 years. The ischium, the tibia and the fourth rib on the right side were involved in the first, second and third cases, respectively, and both the tibia and the femur were involved in the fourth case. Attention is directed to the fairly frequent occurrence of lesions involving one or a few bones, in which the symptoms are comparatively mild. Involvement of bones is apt to be on one side of the body but may be on both sides. Although the etiology is unknown, the condition is thought by most authors to represent an anomalous skeletal developmental defect. It usually starts in childhood and develops slowly, often being recognized only during adult life. The osseous changes demonstrated on roentgenographic examination are suggestive and in some cases are diagnostic. The final diagnosis is best made after careful consideration of the roentgen and clinical observations and correlation of these observations with the biopsy. Extraskelatal changes occur as a rule only when the bone changes are well defined. While pigmentation of the skin occurs in men, it is apt to be more pronounced in women. The precocious sexual development and premature skeletal growth and maturation seem to occur only in women. Hyperthyroidism may occur in either sex. The disease is slowly progressive but may reach a static stage in adult life. Life expectancy is not influenced. A curative type of therapy is not known. Elective surgical procedures should usually be avoided, as new bone is laid down slowly and frequently does not develop.

Radium Needles in Cancer of Bladder.—Lenz and his co-workers treated 44 patients with microscopically proved cancer of the urinary bladder in or near the trigone by suprapubic cystostomy and implantation of radium needles during the period 1931 to 1941. After exposure of the tumor by cystostomy, the first row of needles was inserted into the muscularis, under the tumor from above down toward the neck of the bladder, including 2 or 3 cm. peripheral to the tumor, depending on its size and invasiveness. Additional needles may be placed at right angles to and across the nonradiating points and eyes of the first row in order to raise the low radiation intensity in these areas. A tumor dose of 8,000 gamma roentgens seems preferable to smaller doses. Thirty-four patients died of persisting or recurring cancer, and 1 died fifteen years after treatment, cancer not being demonstrated on necropsy. Nine patients are living and appear to be free from clinical evidence of cancer. Prognosis is poor if the cancer has extended through the wall of the bladder and if the ureters are involved. Results were best in small papillary tumors, though some of the larger infiltrating cancers responded well to the treatment.

American Practitioner, Philadelphia

2:71-142 (Oct.) 1947. Partial Index

- Carcinoma of Rectum and Anus. P. C. Guzzetta Jr. and W. H. Cole.—p. 71.
Fat-Soluble Vitamins: Fallacies of Ill-Advised Therapy. P. György.—p. 79.
Critical Survey of Use of Estrogens in Treatment of Menopausal Syndrome. H. H. Brainard.—p. 82.
*Primary Atypical Pneumonia: Diagnosis and Treatment of 440 Consecutive Cases Without a Fatality. N. E. Reich, L. F. Ciafalo and J. B. Reinhart.—p. 85.
Problems of Acute Nephritis and Its Sequelae. F. D. Murphy.—p. 99.
Urinary Symptoms in General Practice. E. Matlin.—p. 105.
Prenatal Immunization with Special Reference to Pertussis. C. C. Fischer.—p. 108.
Clinical Aspects of Gastroscopy. W. T. Gibb Jr.—p. 111.
Eosinophilic Granuloma of Bone. Case Report. H. H. Zinneman.—p. 121.

Primary Atypical Pneumonia.—The study by Reich and his associates is based on an analysis of 440 consecutive cases of primary atypical pneumonia, which occurred between June 1943 and June 1946. Most of the cases occurred during the first

eight weeks of the patients' military service. Factors involved were: increased exposure to the elements; overexertion; tension and worry; interference with sleep due to change of hours and various duty details, and readjustment of body habits, resulting in states such as constipation. Of considerable importance was the influence of droplet infection due to sleeping, eating and attending class in close proximity to others. A definite prodromal stage averaging about four days was found to occur. The prodrome is most frequently mistaken for an infection of the upper part of the respiratory tract. Serial roentgenographic studies are a great help in arriving at an early diagnosis and in following the clinical course, because the prodrome is ill defined, the physical signs are variable and the laboratory methods give nonspecific results. Specific therapy is unnecessary unless the patient is dangerously ill. The sulfonamide drugs or penicillin is indicated in cases that reveal evidences of progressive or massive pulmonary involvement, suggestive or proved presence of secondary invaders or signs of severe toxemia, dyspnea and cyanosis. Penicillin is slightly more effective and is accompanied by fewer reactions than are the sulfonamide compounds. Transfusions of whole blood from patients convalescing from primary atypical pneumonia are of great value in supplying antibodies of high titer in dangerously ill patients.

Archives of Otolaryngology, Chicago

46:427-574 (Oct.) 1947

*Bell's Palsy: Pathology and Surgery; Report Concerning 50 Patients Who Were Operated on After Method of Ballance and Ducl. K. Kettel.—p. 427.

Osteomyelitis of Basisphenoid and Basisocciput with Meningitis and Cranial Nerve Palsies as Complication of Nasopharyngeal Packing for Control of Epistaxis: Report of Case with Recovery. A. A. Spar and H. L. Williams.—p. 473.

SYMPOSIUM ON FENESTRATION OF LABYRINTH

Lempert Fenestra Nov-Ovalis Operation for Restoration of Serviceable Unaided Hearing in Patients with Clinical Otosclerosis: Its Present Evolutionary Status. J. Lempert.—p. 478.

Osteogenesis Following Fenestration of Vestibular Labyrinth of Rhesus Monkey: Controlled Experimental Study. J. Lempert, P. E. Meltzer, L. A. Schall and Dorothy Wolff.—p. 512.

Revision of Fenestration Operation. P. E. Meltzer.—p. 528.

Medical and Surgical Care of Patient Selected for Fenestration of Labyrinth. K. M. Day.—p. 534.

Training of Surgeon and Selection of Patient for Fenestration Operation. J. H. Maxwell.—p. 539.

General Correlation. M. F. Jones.—p. 544.

Bell's Palsy.—Kettel operated on 50 patients with Bell's palsy by the method of Ballance and Ducl. In 11 of the 50 patients there was necrosis of the mastoid cells; in 5 of these patients necrosis spread to the entire cellular system, whereas in 6 patients it was observed only in the apex of the mastoid process and particularly around the stylomastoid foramen. In 18 patients the fallopian canal was macroscopically soft and could be opened in a few minutes; in the rest of the patients it was hard like ivory. In 28 patients the nerve was unquestionably edematous macroscopically; in 2, possibly atrophic, and in 1 the changes were so violent that the continuity of the nerve was completely interrupted. It is suggested that Bell's palsy is a primary ischemic paresis of vascular determination. Decompression was carried out in 25 patients in whom signs of returning mobility had not appeared after an observation period of two months. In none of 20 of these patients could the paresis be noted when the face was at rest. They could close the eye completely, smile and laugh, but to a varying degree; only 2 patients had recovered completely. Decompression was carried out in 17 patients in whom the spontaneous recovery of mobility had ceased before complete restitution had been obtained. Thirteen of these were ready for reexamination; in 9 patients surgical intervention had brought about an improvement of mobility, and 1 of these had recovered completely. One of the patients had suffered from a distinct contracture, which disappeared immediately after the operation. Two and one half years afterward there had been no relapse. At a later date the same observation was made in 2 more cases. This shows that the contracture is released by reflex and is due to an irritation of the facial nerve in the fallopian canal. Eight patients had had recurrences of facial palsy from two to nine times. None of them had a relapse after the operation; the mobility improved

in every instance, and 2 patients recovered completely. The favorable effect of the decompression is due to the fact that on exposure of the nerve the circulation of the blood is in some way improved by release of the pressure on the vasa nervorum proper or by the establishment of collateral circulation.

Archives of Surgery, Chicago

55:387-504 (Oct.) 1947

Preparation for a Medical Career: Presidential Address. C. F. Hegner.—p. 387.

Gastric Ulcer Following Radiation. F. E. Hamilton.—p. 394.

Anatomic Distribution of Vagus Nerves at Lower End of Esophagus: Relation to Gastric Neurotomy for Ulcer. W. Walters, H. A. Neibling, W. F. Bradley and others.—p. 400.

Medullary Nail: Presentation of New Type and Report of Case. D. M. Street, H. H. Hansen and B. J. Brewer.—p. 423.

Surgical Relief of Pain in Paraplegic Patients. L. W. Freeman and R. F. Heimburger.—p. 433.

Foreign Bodies in Intestinal Tract. T. J. Snodgrass.—p. 441.

*Principles Governing Total Gastrectomy: Report of 41 Cases. G. T. Pack, G. McNeer and R. J. Boohar.—p. 457.

*Decortication in Treatment of Chronic Empyema. A. R. Curreri and J. W. Gale.—p. 486.

Endotracheal Anesthesia. M. S. Sadove and W. H. Cassels.—p. 493.

Double-Lumened Plastic Tube for Intestinal Intubation. W. H. Honor and H. M. Smathers.—p. 498.

Total Gastrectomy.—According to Pack and his associates removal of the stomach is the ideal operation for gastric cancer. Total gastrectomy is both an excision of the entire stomach and dissection en masse of the related lymph nodes. The authors review observations on 41 patients who underwent total gastrectomy. Thirty-seven stomachs were resected for carcinoma, and 1 for an extensive reticulum cell sarcoma. Of the 3 lesions which proved to be benign, 1 was noncancerous linitis plastica, probably due to syphilis, and 2 were large benign ulcers high on the lesser curvature. A significant factor may overshadow the advantage of maintaining protein balance with an orojejunal Levine tube. In the 16 cases in which a jejunostomy was performed there were 4 operative deaths, only 1 of which was due directly to a pulmonary complication, while among the 25 patients who had feedings by Levine tube there were 5 deaths. The irritation from a foreign body in the nose and throat may cause considerable nasopharyngeal secretion, and with the splinting of the pharynx possibly depressing the cough reflex, pulmonary complications may be invited. The tube may be withdrawn earlier than ten days with reliance on a less nourishing routine. There were 13 operative deaths, a mortality rate of 31.7 per cent. Seventeen patients survived an average of eighteen months; 8 of the 17, who were without nodal involvement at the time of operation, averaged twenty-six and three-tenths months. Of the 11 patients still living on Dec. 1, 1945, 1 has evidence of recurrence of his cancer. Seven patients who had resection for carcinoma have no evidence of recurrence, and 3 who had the operation for benign lesions are asymptomatic. In the series for cancer, there are 5 patients who survived more than three years. None of these gave evidence of extension of the cancer to tributary lymph nodes at the time of operation.

Decortication in Chronic Empyema.—Curreri and Gale point out that in chronic empyema the deposition of fibrous tissue on the pleural surfaces results in an immobile, unyielding and nonexpansile lung. Delorme advocated in 1894 decortication of the binding scar from the visceral pleura, but surgical knowledge was insufficiently advanced at the time to execute this procedure successfully. In World War II Churchill and his thoracic teams in the European theater were confronted with numerous hemothoraxes and pyohemothoraxes with nonexpansile lung. Thoracoplasty in these otherwise normal persons would most certainly lead to permanent semi-invalidism. They met this challenge by reconsidering Delorme's decortication. Well trained thoracic surgical teams, use of antibiotics and blood transfusions resulted in a low mortality and a minimum of complications. The number of cures was remarkably high. The optimum time for surgery is within six weeks following the injury. The authors report 2 cases of chronic pleuritis successfully treated by decortication. It is important to know the extent of pathologic change in the underlying pulmonary tissue and bronchi. If both lobes of the lung are involved, decortication is useless unless it is followed by immediate complete thoracoplasty. In the presence of tuberculous bronchitis or stenosis, reexpansion by decortication may reactivate the disease or may

produce shifting of the mediastinum with overexpansion of the contralateral lung. The authors believe that decortication for tuberculous empyema with nonexpansile lung should be reserved for those cases of disease limited to the upper lobe and without evidence of tuberculous bronchitis.

Bulletin of Johns Hopkins Hospital, Baltimore

81:217-294 (Oct.) 1947

- Administration of Di-Isopropyl Fluorophosphate (DFP) to Man: I. Effect on Plasma and Erythrocyte Cholinesterase; General Systemic Effects; Use in Study of Hepatic Function and Erythropoiesis; and Some Properties of Plasma Cholinesterase. D. Grob, J. L. Lilienthal Jr., A. M. Harvey and B. F. Jones.—p. 217.
 Id.: II. Effect on Intestinal Motility and Use in Treatment of Abdominal Distention. D. Grob, J. L. Lilienthal Jr. and A. M. Harvey.—p. 245.
 Id.: III. Effect on Central Nervous System with Special Reference to Electrical Activity of Brain. D. Grob, A. M. Harvey, O. R. Langworthy and J. L. Lilienthal Jr.—p. 257.
 Id.: IV. Effects on Neuromuscular Function in Normal Subjects and in Myasthenia Gravis. A. M. Harvey, J. L. Lilienthal Jr., D. Grob and others.—p. 267.

Indiana State Medical Assn. Journal, Indianapolis

40:955-1098 (Oct.) 1947

- Toxemia of Pregnancy. S. T. Garber and N. S. Assali.—p. 979.
 Recent Surgical Advances in Treatment of Ulcers of Duodenum. K. A. Meyer.—p. 986.
 Evaluation of Neuropsychiatry. H. D. Fabing.—p. 988.

40:1099-1202 (Nov.) 1947

- President's Address. F. T. Romberger.—p. 1123.
 Bundle Branch Block of Broad S Type: Report of 11 Cases Without Any Evidence of Heart Disease with 1 Instance Showing Partial and Transient Block. C. Fisch.—p. 1128.
 History, Diagnosis and Treatment of Common Anorectal Diseases. P. K. Cullen.—p. 1133.
 Maternal, Newborn and Premature Infant Care, and Cesarean Sections in Indiana Hospitals. R. E. Jewett and G. W. Gustafson.—p. 1145.
 Loopholes in Disability Insurance. A. Stump.—p. 1150.
 Services for Crippled Children. C. D. Martz.—p. 1152.
 Hazards of Butchering. J. M. Palm.—p. 1154.

Hazards of Home Butchering.—Palm shows that due to the increased number of frozen food lockers and the increase of home processing of meats the hazards involved in home butchering are also increasing. In the past year the author has observed 5 cases of tularemia, 3 cases of brucellosis and 2 cases of erysipeloid infection. The cases of tularemia were all of the ulceroglandular type. Two patients were brothers who had helped to butcher the same hogs. The livers of the hogs were considered unfit for consumption, as a result of "spotting and mottling," and were discarded. Many hogs are infected with tularemia, because they graze in the field and may feed on an infected rabbit or other animal which may have died of the disease. The 3 cases of brucellosis came from the processing of infected beef. The 2 cases of erysipeloid infection occurred in 2 persons who were neighbors and had assisted one another in their "fall butchering."

Journal of Aviation Medicine, St. Paul

18:399-514 (Oct.) 1947

- Aero Medical Problems with Respect to Atomic Weapons. J. M. Talbot.—p. 401.
 Physiologic Characteristics of Flight Personnel. A. Hurtado, H. Astesalazar, C. Merino and others.—p. 406.
 Observations on Clinical Use of Intermittent Positive Pressure. H. L. Motley, L. Werko, A. Courmand and D. W. Richards Jr.—p. 417.
 The Burns Pneumatic Balance Resuscitator. H. J. Jacobs.—p. 436.
 Study of Pilots with Repeated Aircraft Accidents. D. Horn.—p. 440.
 Human Adrenal Cortex in Relation to Stressful Activities. H. Hoagland.—p. 450.
 Severe Anoxic Anoxia: Follow-Up Report of Case with Recovery. C. E. Kossmann.—p. 465.
 Do Permanent Effects Result from Repeated Blackouts Caused by Positive Acceleration? E. H. Wood, E. H. Lambert and C. F. Code.—p. 471.
 Relationship Between Alveolar Air Oxygen Tensions and Arterial Blood Oxygen Saturations in Man During Work at Altitude. C. L. Gemmill.—p. 483.

Effects from Repeated Blackouts.—According to Wood and his associates, it is an established fact that the loss of vision and consciousness which may result from exposure to positive acceleration in aircraft or on the human centrifuge are caused by stagnant anoxia of the retinas and brain. During the war in the effort to develop and perfect antiblackout devices, many of the personnel of human centrifuge laboratories served

repeatedly as subjects in tests of this equipment. Such tests involved repeated exposures to high positive accelerations and consequently a considerable number of blackouts and episodes of unconsciousness. Since accurate physiologic recordings were taken during these tests, information is available as to the number and duration of the symptoms of these persons. The present report deals with data which have been collected on 4 of the personnel of the Mayo centrifuge laboratories who have undergone the greatest number of exposures to acceleration. From these data it can be concluded that, at least from the point of view of permanent residual dysfunction, the human brain is relatively resistant to repeated five to ten second periods of stagnant anoxia. Inasmuch as nearly five years have elapsed since these men began these exposures to acceleration and one and one half years since the exposures were concluded, it seems highly probable that untoward effects will not develop. The number of the blackouts experienced by the persons included in this report is considerably greater than those experienced by pilots. Consequently, the average pilot has little or nothing to fear in regard to the development of residual or permanent effects as a result of the blackouts or episodes of unconsciousness that he may experience in flight.

Journal of Pharmacology & Exper. Therap., Baltimore

91:93-193 (Oct.) 1947. Partial Index

- Comparison of Racemic and Levo Glycero-Guaiacol Ethers for Anesthetic and Other Actions. H. W. Smith.—p. 93.
 Comparison of Some Anti-Histamine Substances. J. D. P. Graham.—p. 103.
 Amehacidal and Pharmacologic Activities of Carbarsone Oxide (P-Carbamidophenylarsenous Oxide) and Its Dithiocarboxymethyl and Dithiocarboxyphenyl Derivatives. H. H. Anderson, E. L. Hansen, P. T. Sah and J. R. Cafiso.—p. 112.
 Diuretic Factor Present in Normal Dog, Human and Dialyzed Human Urine. J. M. Little.—p. 124.
 Digitalis VI. Pharmacodynamic Studies of Gitogenin. H. K. Iwamoto, F. K. Bell, F. O. Laquer and others.—p. 130.
 Acute Joint Toxicity of Quinacrine, Quinine, Hydroxyethylapocupreine, Pamaquine and Pentaquine. G. Chen and E. M. K. Geiling.—p. 133.
 Evaluation of Assay Methods for Arsenicals. G. Chen and J. H. McCreary.—p. 140.
 Mouse Assay for Curare. H. G. Skinner and D. M. Young.—p. 144.
 Toxicity and General Pharmacology of N-p-Chlorophenyl-N-isopropyl Biguanide. K. K. Chen and R. C. Anderson.—p. 157.
 Pharmacology of New Series of Choline Salts. C. J. Carr and F. K. Bell.—p. 169.
 Studies in Vitro and in Vivo on Influence of Liver on Isonipicaine (Demerol) Activity. E. L. Way, R. Swanson and A. I. Gimble.—p. 178.
 Quantitative Estimation of Theophylline in Blood. E. B. Truitt Jr., C. J. Carr, H. M. Bubert and J. C. Krantz Jr.—p. 185.
 Local Anesthetic Action of a Series of Aryl-Urethanes. Helen Ramsey and H. B. Haag.—p. 190.

Diuretic Factor in Urine.—Little says that the possibility that some urinary diuretic factor does exist has been tested by the infusion of canine and human urine and dialyzed human urine into normal unanesthetized dogs. When the rate of urinary flow and total volume of urine excreted were compared with the rate and volume obtained following the injection of an appropriate control solution, it was found that a considerable diuresis resulted and that it could be attributed to the presence of some diuretic factor in the urine or dialyzed urine.

Toxicity of Antimalarial Agents when Employed Jointly.—In the treatment of malaria quinacrine, quinine and pamaquine have been employed jointly with the supposition that a combination of these may be more effective than the individual drugs. Chen and Geiling investigated by means of intraperitoneal injection in mice the acute lethal toxicities of quinacrine and quinine, quinine and hydroxyethylapocupreine, quinacrine and pamaquine, quinine and pamaquine, quinine and pentaquine. It was found that the combinations of these antimalarials are different in their joint toxicity: (1) quinacrine and quinine, quinine and hydroxyethylapocupreine act independently and similarly (2) quinacrine in sublethal doses and pamaquine act independently but diversely. (3) Quinine and pamaquine, quinine and pentaquine are synergistic in their joint action.

Medicine, Baltimore

26:221-332 (Sept.) 1947

- Kala Azar in American Military Personnel: Report of 30 Cases. H. Most and P. H. Lavietes.—p. 221.
 Involvement of Nervous System by Malignant Lymphoma. H. J. Sparling Jr., R. D. Adams and F. Parker Jr.—p. 285.

Michigan State Medical Society Journal, Lansing

46:1114-1224 (Oct.) 1947

- "Dumping Syndrome" Following Anterior Gastrojejunostomy: Follow-Up Study of 75 Partial Gastric Resections. C. S. Kennedy, R. P. Reynolds and M. O. Cantor.—p. 1153.
- Fish Tapeworm Infestation Due to Sampling of "Gefulte" Fish or Its Soup Before Adequate Cooking: Report of 11 Cases with a Discussion on Epidemiology of Disease. D. J. Sandweiss and M. H. Sugarman.—p. 1156.
- Treatment of Motion Sickness. R. W. Monto.—p. 1164.
- Subclinical Hypo-Ovarianism. J. A. Winter.—p. 1169.
- Re-resection of Head of Pancreas for Carcinoma. A. W. Blain and N. Jarrin.—p. 1175.
- Case of Snapping Thumb. J. L. Pasch and B. E. Stofer.—p. 1181.
- Psychiatry and Psychosomatic Medicine Viewed by an Internist. B. C. Lockwood.—p. 1183.
- Rise and Fall of Medical Incomes: Trends in Medical Incomes, Expenses, Taxes and Savings During Past Fifteen Years. H. C. Black and A. E. Skaggs.—p. 1190.

Treatment of Motion Sickness.—Monto believes that the incidence of motion sickness in modern methods of travel is sufficient to warrant serious consideration both as to prophylaxis and treatment. Scopolamine hydrobromide has been found to be the most effective anti-motion sickness medicament. When this drug is combined with acetylsalicylic acid in a chewing gum base, the resultant combination affords a most satisfactory therapeutic agent in prophylaxis and treatment of motion sickness.

Nebraska State Medical Journal, Lincoln

32:379-414 (Oct.) 1947

- Carcinoma of Esophagus and Cardia. W. E. Adams.—p. 381.
- Peritoneal Irrigation of Uremia. E. A. Connolly and A. W. Lempka.—p. 387.
- Methemoglobinemia in Infants from Water Containing High Concentrations of Nitrates. G. E. Stafford.—p. 392.
- Carcinoma of Extrahepatic Bile Ducts. R. V. Slattery and W. J. Reals.—p. 395.
- Fundamentals in Technic of Amputations. S. A. Swenson Jr.—p. 397.
- Mechanical Intestinal Obstruction Due to Congenital Band etc. J. R. Schenken.—p. 399.

32:415-446 (Nov.) 1947

- Certain Factors in Surgical Approach to Thyroid Disease. L. P. Engel.—p. 417.
- Diverticulitis of Colon. C. Rosser.—p. 420.
- Transfusion Reactions and Complications. R. Schenken.—p. 423.
- Physician's Role in Behavior Problems. G. L. Sandritter.—p. 429.

Peritoneal Irrigation of Uremia.—For the treatment of uremia, Connolly and Lempka used continuous intraperitoneal irrigation and continuous gastric lavage with a twofold purpose in mind: first, to prevent azotemia from reaching a degree that would cause death before the kidneys could function again, and second, to reduce the azotemia to a point where reparative processes could be carried on at a faster pace, thereby allowing the kidney to resume function at an earlier date. The authors present the histories of 2 patients, who were treated with intraperitoneal irrigation. The treatment is not without danger. Peritonitis is possible, but it is avoidable with the use of bacterial filters and antibiotics. The likelihood of peritonitis is reduced by putting drainage tubes in properly the first time and avoiding repeated reinsertion. Another danger is pulmonary edema due to forced intravenous fluids and peritoneal irrigation with improperly composed fluids. With no urinary output, 1,000 cc. of fluids, given intravenously each day, is considered sufficient. The optimum time to start intraperitoneal irrigation has not been determined, but it seems to be of no advantage before uremia has developed, and it should be discontinued as soon as the kidney is able to resume function.

Methemoglobinemia in Infants from Nitrates in Water.—Stafford says that methemoglobinemia in infants who have ingested well water containing a high concentration of nitrates has been reported in Iowa, in Kansas and in Belgium. One proved case and 1 presumptive case, which were observed in Nebraska, are reported in this paper. One of the infants became severely ill on a formula of powdered milk when she had not been cyanosed on a formula of evaporated milk, which used less water from the farm well. Perhaps the diarrhea and slow gain in weight were symptoms of nitrate toxicity. It is possible that the inflamed mucosa of her intestine allowed more rapid absorption of the nitrates formed from the ingested nitrates. In most of the reported cases there has been an associated gastrointes-

tinal disturbance. Methylene blue placed in the stomach by tube in proper dosage rapidly relieves methemoglobinemia. Ascorbic acid is also effective against methemoglobinemia, but the action requires several hours. Thiamine is apparently as effective as methylene blue and is not toxic, but it is not readily available. Niacin is also effective. Spontaneous recovery from methemoglobinemia occurs in about four days if the source of the nitrate is removed. This apparently occurred in the second patient during her first readmission to the hospital. It is believed, however, that the first case would have terminated fatally if the infant had not been actively treated. The author stresses that formula-fed infants should not be dismissed to rural areas in which the nitrate content of the water is not known to be safe.

New England Journal of Medicine, Boston

237:569-602 (Oct. 16) 1947

- Clinical Significance of Malignant Neoplasms of Thyroid Gland. W. F. Rogers Jr., S. P. Asper Jr. and R. H. Williams.—p. 569.
- Use of Penicillin in Treatment of Carriers of Beta-Hemolytic Streptococci Among Patients with Rheumatic Fever. Jessamine R. Goerner, B. F. Mastell and T. D. Jones.—p. 576.
- Value of Methylene Blue Test in Detection of Bilirubin. C. L. Holt.—p. 580.
- General Principles of Laboratory Diagnosis of Viral Infections. F. S. Cheever.—p. 584.
- Calcareous Aortic Stenosis.—p. 590.
- Diffuse Fibrosis of Myocardium.—p. 593.

Malignant Neoplasms of Thyroid.—Rogers and his associates point out that the value of extirpating goiters, particularly nodular ones, for the prevention of cancerous neoplasms of the thyroid has been the subject of considerable discussion. They reviewed the records of patients with goiter admitted to the Boston City Hospital, the Johns Hopkins Hospital and the Massachusetts General Hospital. A diagnosis of cancer was made in 64 cases, or in 1.99 per cent of all the patients with goiter. Ten additional cases of cancer, not proved histologically, would bring the incidence to 2.29 per cent. The majority of patients who died of cancer of the thyroid or had widespread extension had tumors that were classed as highly malignant. These were usually characterized by the sudden appearance of a mass in the neck, although at times they arose in a previous goiter, and they pursued a rapidly fatal course. Such tumors are seldom removed completely by prophylactic surgery. In cases classed as tumors of moderate or low grade cancer there were few deaths (none in the latter), and the results of treatment were fairly satisfactory. When one considers that even after the removal of a benign tumor of the thyroid or a clinically unsuspected cancer development or recurrence of a malignant neoplasm is not infrequent, the value of routine prophylactic surgery on all nodular thyroid glands becomes less impressive. Moreover, operations on nontoxic goiters are associated with complications and are sometimes fatal. Single nodules, particularly in young persons, should in most cases be removed, and in the absence of thyrotoxicosis any nodule showing an increase in size, in firmness or in fixation should be extirpated. Single nodules or masses in the thyroid are the most frequent site of malignant lesions.

Penicillin in Treatment of Carriers of Streptococci.—Goerner and her associates say that penicillin has been administered to patients found to have positive throat cultures with the view to preventing the spread of hemolytic streptococci from one patient to another. Eighteen chronic carriers of beta hemolytic streptococci and 2 of acute streptococcal tonsillitis were each treated with a total of 1,200,000 units of penicillin, given intramuscularly during ten days. In 17 cases the infecting organisms were eliminated permanently from the throat cultures. One group A streptococcus and two that did not belong to group A, C or H failed to disappear. In 5 cases in which tonsillectomies were performed, the tonsillar fossae and sectioned tonsils were free from hemolytic streptococci one hundred and twenty-five to one hundred and eighty-five days after treatment. In 2 cases the antistreptolysin O titers did not rise after acute streptococcal infections that were promptly treated with penicillin. Injections of penicillin given in slowly absorbable form once a day for ten days were observed to be successful in eliminating the beta hemolytic streptococcus carrier state in 5 of 6 cases. The ability to eliminate beta hemolytic streptococci

from the throats of most patients in close contact with persons who have had rheumatic fever suggests a practical method of protecting the latter group from infection due to the beta hemolytic streptococcus. Further observations are needed to ascertain whether prompt penicillin therapy for acute infections due to hemolytic streptococcus in subjects with rheumatic fever may decrease the likelihood of a recurrence of rheumatic fever.

Plastic & Reconstructive Surgery, Baltimore

2:403-516 (Sept.) 1947

- *Problem of Decubitus Ulcers in Paraplegics. J. G. Kostrubala and P. W. Greeley.—p. 403.
- Fate of Skin Homotransplants Performed on Previously X-Rayed Rats. N. Rabinovici.—p. 413.
- Report of Clinical Experiences with Homografts. W. P. Longmire Jr., H. B. Stone, A. S. Daniel and C. D. Goon.—p. 419.
- Surgical Removal of Traumatic Tattoos of Face. P. C. Iverson.—p. 427.
- Pre-Operatively Applied, Mated, Plaster of Paris Casts as an Aid in Migration of Open-Pedicle Cross Leg Flaps. R. B. Stark.—p. 433.
- Double-Timed Artery Ligation: Early Report. B. Hadjistamoff.—p. 439.
- Synovitis of Wrist. T. W. Stevenson.—p. 443.
- Sublimis Transplant to Restore Abduction of Index Finger. W. C. Graham and D. Riordan.—p. 459.
- Critical Review of Recent Literature on Rhinoplasty. J. Safian.—p. 463.
- Use of a Migrated Skin Flap for Both Lining and Covering of an Artificial Antethoracic Esophagus. E. M. Maunahan.—p. 474.
- Problem of Protruding Ear. W. G. McEvert.—p. 481.
- Nasal and Auricular Fistulas. H. Brunner and W. A. Donnelly.—p. 497.

Decubitus Ulcers in Paraplegics.—On the basis of observations in over 50 cases of decubitus ulcers in paraplegic patients Kostrubala and Greeley believe that the following details are essential to arrive at uniformly acceptable end results: 1. All patients are given large amounts of penicillin before and after operation. In addition, succinylsulfathiazole is used when closure of the ischial decubitus ulcers is undertaken. 2. The ulcer is excised, including the pyogenic membrane, well beyond the ulcer borders into apparently healthy skin and subcutaneous tissue. 3. All underlying bony prominences are removed. 4. The bony stump is covered with a flap of adjacent fascia, or fascia and muscle, in the ischial lesions to prevent adherence to the overlying skin flap and to aid in filling the dead space. The exposed cancellous bone helps to supply increased vascularity to the transposed overlying soft tissues. 5. All cutaneous defects are repaired with large rotated border flaps of skin and subcutaneous fat. No attempt is made to suture the donor area, since avoidance of tension is of prime importance. The donor area is covered with a split thickness skin graft. 6. The flap and graft are covered with a large and bulky dressing applied under moderate pressure. In decubitus ulcers which have been closed by following the foregoing principles there have not been recurrences of ulcers in the rotated skin flaps. It is believed that amputation of the bony prominences is most important in the prevention of recurrences.

Review of Gastroenterology, New York

14:573-744 (Oct.) 1947

- *Results of Medical Treatment of Peptic Ulcer. T. Kahrs and A. Schrumpt.—p. 673.
- *Treatment of Cirrhosis of the Liver with Crude Liver Extract by Intravenous Route. W. B. Rawls and V. C. Ancona.—p. 685.
- Achalasia and Megaesophagus as Complication and Sequela of Pertussis. F. Cunha.—p. 693.
- Biologic Premises for Treatment of Colitis. B. Sokoloff.—p. 704.
- Pre- and Postoperative Management of Gastrointestinal Diseases. D. A. Meiselas.—p. 717.
- Study of Digestive Capacity of Stomach by Means of Physiochemical Methods. S. S. Cytronberg, A. L. A. Del Castillo and A. de Laeica.—p. 721.

Medical Treatment of Peptic Ulcer.—Kahrs and Schrumpt present a follow-up study of 239 cases of gastric and duodenal ulcer treated during the period 1938 to 1942. Seventeen patients died during the observation period and 2 are excluded owing to earlier operation for ulcer. That leaves 220 patients, of whom 172 have been treated for chronic ulcer and 48 for acute hemorrhage. Of the 144 duodenal ulcers, 114 involved men and 30 women. The 28 gastric ulcers were equally distributed between men and women. Of 169 ulcer patients examined for occult bleeding, 74 were positive and in 95 blood was not detected. The therapeutic results were not influenced by the presence or absence of occult bleeding. The authors

designate as recovered those who are entirely free from symptoms and who can eat all types of food. In the group called improved the patients occasionally have dyspepsia, but this is not so pronounced that later treatment has been necessary. As not cured they designate patients later requiring operation and those who suffer from more or less continual dyspepsia in spite of a strict regimen, often showing a persistence of the ulcer roentgenologically. The follow-up study revealed that 65 had recovered, 76 were improved and 79 were not cured. Relapses generally occur during the first three years. The minimum observation period of three and a half years may therefore be regarded as sufficient. Therapeutic results in cases of acute hemorrhage were better than in chronic ulcer. Two series of medical treatment were generally tried before surgical treatment was recommended. In view of the low percentage of permanent recovery with medical treatment, the authors advise young patients with chronic ulcer to have an operation sooner than has hitherto been the practice.

Intravenous Liver Extract in Treatment of Cirrhosis of Liver.—Rawls and Ancona report 22 patients, 18 with biliary cirrhosis, who received treatment for four months or longer. Diagnosis was established by clinical observations and laboratory tests. Treatment consisted of administration of crude liver extract, the water soluble, alcohol insoluble portion of dry powdered liver, which has been rendered free of pyrogens and toxic amines. To test for sensitivity, 0.1 to 0.2 cc. of the undiluted extract is given intramuscularly. If within thirty minutes there is no reaction such as headache, dyspnea, flushing of the skin or other signs of sensitivity, 1 cc. of the liver in 19 cc. sterile pyrogen-free isotonic sodium chloride solution is given intravenously at the rate of 2 cc. per minute. If there is no reaction, the dose is increased gradually. In the presence of sensitivity, as denoted by headache, dyspnea, flushing or other untoward reaction following the intramuscular test dose, desensitizing doses are employed. Return of appetite is usually one of the first indications of improvement and frequently is followed by improvement in all symptoms. Eighteen patients have survived fifteen months or longer; 4 have been able to continue without treatment for periods of four to twelve months. These results indicate that the intravenous administration of crude liver extract has a beneficial effect on the nutritional state in patients with cirrhosis. The extract is safe to administer provided that proper precautions are taken.

Texas State Journal of Medicine, Fort Worth

43:351-416 (Oct.) 1947

- Some Aspects of Naval Medical Research in Wartime. W. L. Mann.—p. 362.
- Genital Abnormalities in Childhood as Seen by Urologist. H. M. Spence and S. S. Baird.—p. 364.
- Treatment of Undescended Testes. J. M. Pace.—p. 371.
- Allergy of Gastro-Intestinal Tract. G. J. Seibold.—p. 377.
- Early Ambulatory Treatment in Gynecologic Surgery. F. D. Taylor.—p. 382.
- Obstetrical Cripple. G. F. Adam.—p. 384.
- Hysterosalpingography in Treatment of Sterility in Female. C. L. Martin and J. J. Szazma Jr.—p. 389.
- Tumors of Larynx. O. W. Suehs.—p. 393.
- *Blast Rupture of Tympanic Membrane. T. W. Folbre.—p. 397.

Rupture of Tympanic Membrane.—Folbre reports observations on 55 cases of perforation of the ear drum due to blast that occurred during the war. In approximately half of the cases there were infections, and in 2 of these mastoiditis developed. One of the most important observations in the treatment of the ear drum perforations was the way the perforations can be stimulated to heal by the use of trichloroacetic acid and an artificial drum of cigaret paper. All perforations of small to moderate size which showed little or no sign of healing were treated by applying a sterile piece of cigaret paper. It is picked up by touching it with a cotton-tipped applicator wet with sterile saline solution. The paper is wiped onto the perforation. Another cotton-tipped applicator wet with trichloroacetic acid is touched against the paper on the perforation. The acid spreads quickly through the paper and cauterizes the edges of the perforation. Pain resulting from this method matters less because the paper is already in place and the patient is no longer required to hold still. About 75 per cent of the perforations on which the paper was applied healed.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Australian and New Zealand J. Surgery, Sydney

17:3-72 (July) 1947

- Place of Surgery in Treatment of Peptic Ulcer. H. Ogilvie.—p. 3.
Carcinoma of Esophagus and Cardiac End of Stomach. L. Doyle.—p. 16.
Method for Treatment of Fractures of Expanded Ends of Long Bones.
H. K. Christie.—p. 29.
Surgical Technique of Operation of Labyrinthine Fenestration for Oto-
sclerotic Deafness. D. G. Carruthers.—p. 37.
Some Aspects of Surgical Pathology of Testis. N. Wyndham.—p. 47.

British Journal of Experimental Pathology, London

28:237-307 (Aug.) 1947

- Culture of Louping-III Virus in Embryonated Egg. D. G. Edward.—p. 237.
Investigation Into Production of Bacteriostatic Substances by Fungi:
Preliminary Examination of Seventy 100 Species, all Basidiomycetes.
W. H. Wilkins.—p. 247.
Electron Microscope Studies of Virus Elementary Bodies. F. W. Bos-
well.—p. 253.
Intestinal Bacteria and Their Production and Consumption of Nicotin-
amide as Affected in Vitro by α -Aminomethylbenzenesulfonamide
(Ambamide). P. Ellinger, M. M. A. Kader and A. Emmanuelowa.—
p. 261.
Ascorbic Acid Content of Hypertrophied Human Prostate. E. L. Kenna-
way and M. M. Tipler.—p. 274.
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Growth of H. Pertussis on Media Without Blood. M. R. Pollock.—
p. 295.

British Journal of Surgery, Bristol

35:1-112 (July) 1947

- Hunterian Ideals To-Day. J. Walton.—p. 1.
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Ligature of Arteries, with Particular Reference to Carotid Occlusion
and Circle of Willis. L. Rogers.—p. 43.
New Operation for Treatment of Hydronephrosis in Association with
Lower Polar (or Aberrant) Artery. H. H. Stewart.—p. 51.
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Idiopathic Infarction of Omentum. M. S. Cagney and G. Milroy.—p. 95.
Case of Strangulated Internal Hernia at Age of 91 in "Fossa Iliaco-Sub-
fascialis." J. A. Ross and J. W. A. Duckworth.—p. 97.
Seminoma of Epididymis in a Young Man. H. Ibrahim.—p. 99.

New Operation for Treatment of Hydronephrosis with Aberrant Artery.—Stewart felt that the standard operation for hydronephrosis due to obstruction from a lower polar artery did not satisfy the ideals of surgery. Ten years ago, when operating for this condition on a boy, aged 15 years, it was found that the lower polar artery was so large as to constitute the chief arterial supply to the kidney. Division of this vessel was out of the question. The author decided on a new procedure, in which the kidney is "molded" so that the lower pole carries the aberrant artery upward into close proximity with the normal renal artery. The anatomic relationships of infancy are thus reestablished, and the natural changes in the anatomy which have occurred with growth are reversed. The operation was successful and today, ten years later, this young man remains in perfect health. Encouraged by this initial success, the author used the operation at first for cases similar to the original one with large polar arteries. As these continued to give uniformly successful results, he extended use of the operation to all cases judged worthy of conservative surgical mea-

sures. He shows that this procedure secures a permanent relief of the obstruction and that the manipulation of the renal parenchyma does not interfere with its excretory function. This operation, which does not entail opening the pelvis or ureter, avoids many of the dangers inherent in the older plastic operations, while it maintains the integrity of the renal arterial supply.

British Medical Journal, London

2:599-640 (Oct. 18) 1947

- Etiology and Prophylaxis of Puerperal Sepsis. J. W. Bigger.—p. 599.
Penicillin and Treatment of Infected Hands in Out-Patients. F. D'Abreu, C. M. Flood and H. B. Hewitt.—p. 603.
Relation of Abacterial Pyuria to Reiter's Syndrome. G. H. Baines.—p. 605.
Photosensitivity to Sunlight from Use of Prophylactic Sulfonamides: Its Relation to Vaccination Reactions. G. Watkinson and B. R. Hillis.—p. 609.
Belladonna Poisoning. M. Hamilton and A. B. Sclarc.—p. 611.
Suppression of Syphilis and Precocious Tertiaryism. J. Marshall.—p. 612.
Nicotinamide and Blood Sugar. J. N. Cumings.—p. 613.

Penicillin for Infected Hands.—D'Abreu and his associates present observations on 185 patients with infected hands and aim to assess the value of a method of administering systemic penicillin which can be used on outpatients. Seventeen of the patients received penicillin, whereas 168 did not. The average loss of duty for these 168 patients was 20.3 days, whereas for those treated with penicillin the average was 8.9 days—a saving of 56 per cent compared with the nonpenicillin series. It is suggested that administration of penicillin in all severe infections of the hand, both in the early stages and after any necessary surgical intervention, should be adopted as a routine method of treatment. A dosage of 125,000 units of penicillin in oil or 300,000 units in aqueous solution twice a day has been found adequate.

Abacterial Pyuria and Reiter's Syndrome.—According to Baines, joint effusions have been reported in several cases of abacterial pyuria. If the cases reviewed by him in this paper had come under observation at a time when the urethritis and cystitis were present, but before the arthritis developed, they would have been classified as abacterial pyuria and not as Reiter's syndrome. It would appear that there is nothing to distinguish the sterile urethritis, cystitis, prostatitis and pyelitis found in Reiter's syndrome from abacterial pyuria. It has repeatedly been stressed that all cases of abacterial pyuria respond to neoarsphenamine therapy. The author has found the same response, as far as the urinary symptoms are concerned, in those cases of Reiter's syndrome that he has treated with neoarsphenamine. The joint lesions did not appear to be greatly affected, though they all cleared up more quickly than might have been expected, and new lesions did not appear after the completion of the neoarsphenamine treatment. The author has suggested elsewhere that abacterial pyuria is a colitis, if not a venereal, disease and that the whole urinary and genital tract may be infected by an organism gaining entrance through the urethra. The other symptoms observed in Reiter's syndrome may be a further extension of the same process. In 2 cases of Reiter's disease in which cystoscopic observations were made in the acute stage, the findings were similar to those in abacterial pyuria.

Sulfonamide Photosensitivity: Relation to Vaccination Reaction.—Watkinson and Hillis say that in the control of streptococcal infections in a Royal Air Force station sulfonamide drugs were administered prophylactically in a dosage of 2 Gm. a day for ten days to 470 persons. A high incidence (34.6 per cent) of photosensitization rashes occurred, due to a combination of three factors—the sun, vaccination and sulfanilamide. The highest incidence of rashes was found in men recently vaccinated and coincided with the development of the pustular stage, even when this occurred after administration of the drug had been suspended. Rashes did not appear in persons in whom vaccination had failed or was refused. All the rashes were evanescent; but true sulfonamide sensitivity remained a possibility, and subjects with rashes were advised to warn physicians in the future of the possibility of their being sensitized. The mechanism of the phenomenon is obscure, the drug, the vaccination lesion and light all playing a part.

from the throats of most patients in close contact with persons who have had rheumatic fever suggests a practical method of protecting the latter group from infection due to the beta hemolytic streptococcus. Further observations are needed to ascertain whether prompt penicillin therapy for acute infections due to hemolytic streptococcus in subjects with rheumatic fever may decrease the likelihood of a recurrence of rheumatic fever.

Plastic & Reconstructive Surgery, Baltimore

2:403-516 (Sept.) 1947

- *Problem of Decubitus Ulcers in Paraplegics. J. G. Kostrubala and P. W. Greeley.—p. 403.
- Fate of Skin Homotransplants Performed on Previously X-Rayed Rats. N. Rabinovici.—p. 413.
- Report of Clinical Experiences with Homografts. W. P. Longmire Jr., H. B. Stone, A. S. Daniel and C. D. Goon.—p. 419.
- Surgical Removal of Traumatic Tattoos of Face. P. C. Iverson.—p. 427.
- Pre-Operatively Applied, Mated, Plaster of Paris Casts as an Aid in Migration of Open-Pedicle Cross Leg Flaps. R. B. Stark.—p. 433.
- Double-Timed Artery Ligation: Early Report. B. Hadjistamoff.—p. 439.
- Synovitis of Wrist. T. W. Stevenson.—p. 443.
- Sublimis Transplant to Restore Abduction of Index Finger. W. C. Graham and D. Riordan.—p. 459.
- Critical Review of Recent Literature on Rhinoplasty. J. Safian.—p. 463.
- Use of a Migrated Skin Flap for Both Lining and Covering of an Artificial Antithoracic Esophagus. E. M. Hanrahan.—p. 474.
- Problem of Protruding Ear. W. G. McEvitt.—p. 481.
- Nasal and Auricular Fistulae. H. Brunner and W. A. Donnelly.—p. 497.

Decubitus Ulcers in Paraplegics.—On the basis of observations in over 50 cases of decubitus ulcers in paraplegic patients Kostrubala and Greeley believe that the following details are essential to arrive at uniformly acceptable end results: 1. All patients are given large amounts of penicillin before and after operation. In addition, succinylsulfathiazole is used when closure of the ischial decubitus ulcers is undertaken. 2. The ulcer is excised, including the pyogenic membrane, well beyond the ulcer borders into apparently healthy skin and subcutaneous tissue. 3. All underlying bony prominences are removed. 4. The bony stump is covered with a flap of adjacent fascia, or fascia and muscle, in the ischial lesions to prevent adherence to the overlying skin flap and to aid in filling the dead space. The exposed cancellous bone helps to supply increased vascularity to the transposed overlying soft tissues. 5. All cutaneous defects are repaired with large rotated border flaps of skin and subcutaneous fat. No attempt is made to suture the donor area, since avoidance of tension is of prime importance. The donor area is covered with a split thickness skin graft. 6. The flap and graft are covered with a large and bulky dressing applied under moderate pressure. In decubitus ulcers which have been closed by following the foregoing principles there have not been recurrences of ulcers in the rotated skin flaps. It is believed that amputation of the bony prominences is most important in the prevention of recurrences.

Review of Gastroenterology, New York

14:573-744 (Oct.) 1947

- *Results of Medical Treatment of Peptic Ulcer. T. Kahrs and A. Schrumph.—p. 673.
- *Treatment of Cirrhosis of the Liver with Crude Liver Extract by Intravenous Route. W. B. Rawls and V. C. Ancona.—p. 685.
- Achalasia and Megacystophagus as Complication and Sequela of Pertussis. F. Cunha.—p. 693.
- Biologic Premises for Treatment of Colitis. B. Sokoloff.—p. 704.
- Pre- and Postoperative Management of Gastrointestinal Diseases. D. A. Meiselas.—p. 717.
- Study of Digestive Capacity of Stomach by Means of Physicochemical Methods. S. S. Cytronberg, A. L. A. Del Castillo and A. de Lachica.—p. 721.

Medical Treatment of Peptic Ulcer.—Kahrs and Schrumph present a follow-up study of 239 cases of gastric and duodenal ulcer treated during the period 1938 to 1942. Seventeen patients died during the observation period and 2 are excluded owing to earlier operation for ulcer. That leaves 220 patients, of whom 172 have been treated for chronic ulcer and 48 for acute hemorrhage. Of the 144 duodenal ulcers, 114 involved men and 30 women. The 28 gastric ulcers were equally distributed between men and women. Of 169 ulcer patients examined for occult bleeding, 74 were positive and in 95 blood was not detected. The therapeutic results were not influenced by the presence or absence of occult bleeding. The authors

designate as recovered those who are entirely free from symptoms and who can eat all types of food. In the group called improved the patients occasionally have dyspepsia, but this is not so pronounced that later treatment has been necessary. As not cured they designate patients later requiring operation and those who suffer from more or less continual dyspepsia in spite of a strict regimen, often showing a persistence of the ulcer roentgenologically. The follow-up study revealed that 65 had recovered, 76 were improved and 79 were not cured. Relapses generally occur during the first three years. The minimum observation period of three and a half years may therefore be regarded as sufficient. Therapeutic results in cases of acute hemorrhage were better than in chronic ulcer. Two series of medical treatment were generally tried before surgical treatment was recommended. In view of the low percentage of permanent recovery with medical treatment, the authors advise young patients with chronic ulcer to have an operation sooner than has hitherto been the practice.

Intravenous Liver Extract in Treatment of Cirrhosis of Liver.—Rawls and Ancona report 22 patients, 18 with biliary cirrhosis, who received treatment for four months or longer. Diagnosis was established by clinical observations and laboratory tests. Treatment consisted of administration of crude liver extract, the water soluble, alcohol insoluble portion of dry powdered liver, which has been rendered free of pyrogens and toxic amines. To test for sensitivity, 0.1 to 0.2 cc. of the undiluted extract is given intramuscularly. If within thirty minutes there is no reaction such as headache, dyspnea, flushing of the skin or other signs of sensitivity, 1 cc. of the liver in 19 cc. sterile pyrogen-free isotonic sodium chloride solution is given intravenously at the rate of 2 cc. per minute. If there is no reaction, the dose is increased gradually. In the presence of sensitivity, as denoted by headache, dyspnea, flushing or other untoward reaction following the intramuscular test dose, desensitizing doses are employed. Return of appetite is usually one of the first indications of improvement and frequently is followed by improvement in all symptoms. Eighteen patients have survived fifteen months or longer; 4 have been able to continue without treatment for periods of four to twelve months. These results indicate that the intravenous administration of crude liver extract has a beneficial effect on the nutritional state in patients with cirrhosis. The extract is safe to administer provided that proper precautions are taken.

Texas State Journal of Medicine, Fort Worth

43:351-416 (Oct.) 1947

- Some Aspects of Naval Medical Research in Wartime. W. L. Mann.—p. 362.
- Genital Abnormalities in Childhood as Seen by Urologist. H. M. Spence and S. S. Baird.—p. 364.
- Treatment of Undescended Testes. J. M. Pace.—p. 371.
- Allergy of Gastro-Intestinal Tract. G. J. Seibold.—p. 377.
- Early Ambulatory Treatment in Gynecologic Surgery. F. D. Taylor.—p. 382.
- Obstetrical Cripple. G. F. Adam.—p. 384.
- Hysterosalpingography in Treatment of Sterility in Female. C. L. Martin and J. J. Szama Jr.—p. 389.
- Tumors of Larynx. O. W. Suehs.—p. 393.
- *Blast Rupture of Tympanic Membrane. T. W. Folbre.—p. 397.

Rupture of Tympanic Membrane.—Folbre reports observations on 55 cases of perforation of the ear drum due to blast that occurred during the war. In approximately half of the cases there were infections, and in 2 of these mastoiditis developed. One of the most important observations in the treatment of the ear drum perforations was the way the perforations can be stimulated to heal by the use of trichloroacetic acid and an artificial drum of cigaret paper. All perforations of small to moderate size which showed little or no sign of healing were treated by applying a sterile piece of cigaret paper. It is picked up by touching it with a cotton-tipped applicator wet with sterile saline solution. The paper is wiped onto the perforation. Another cotton-tipped applicator wet with trichloroacetic acid is touched against the paper on the perforation. The acid spreads quickly through the paper and cauterizes the edges of the perforation. Pain resulting from this method matters less because the paper is already in place and the patient is no longer required to hold still. About 75 per cent of the perforations on which the paper was applied healed.

Book Notices

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1946, with the Comments that Have Appeared in the Journal. Cloth. Price, \$1. Pp. 137, with 4 illustrations. American Medical Association, 535 N. Dearborn St., Chicago 10, 1947.

This volume presents not only reports on the medicinal articles which the Council has found unacceptable for inclusion in New and Nonofficial Remedies during the past year but also status reports on therapeutic advances and procedures and on promising drugs.

Widespread attention was attracted by publication in THE JOURNAL of the report of Dr. S. M. Feinberg, "Histamine and Antihistaminic Agents," sponsored by the Council, which appears in this volume. Since it was first published the Council has accepted for inclusion in New and Nonofficial Remedies the two new agents evaluated in the article, diphenhydramine hydrochloride and tripeleminamine hydrochloride ("benadryl hydrochloride" and "pyribenzamine hydrochloride," respectively).

During the past year the Council has reported on three unacceptable preparations: Cabasil, an unscientific mixture, the exploitation of which for use in a multitude of disease conditions is aptly expressed in the title, "Quackery Unlimited"; the pseudoscientific ethylene disulphonate (Allergosil brand), a preparation of highly uncertain composition exploited to physicians for use in allergic conditions; and Formula A-1, covered in a joint report of the Council on Pharmacy and Chemistry and the Council on Industrial Health as an expensive but poor substitute for acetylsalicylic acid and citrate of magnesia. Formula A-1 has been cleverly exploited to industrial concerns for use in reducing absenteeism due to colds.

Attention is called to the several reports on the adoption of generic designations for drugs proposed or marketed under protected (proprietary) names. Not all such actions of the Council have been the subject of separate published reports; the recognized terms have appeared in the published descriptions of the drugs when accepted and will be inserted in another Council publication, New and Nonofficial Remedies, as adoption of such designations for already accepted products proceeds. This is in accord with a recent revision of the Council's rule governing the names of accepted preparations.

Physikalische Medizin in Diagnostik und Therapie. Von Wolfgang Holzer, Professor Dr. Med. et Dr. Inc., Vorstand der Psychiatrisch-Neurologischen Universitätsklinik Graz und des Entwicklungslaboratoriums für physikalische Medizin der Nervenklinik in Graz. Band II, Bücherei der physikalischen Medizin. Fifth and sixth edition. Cloth. Price, \$9. Pp. 769, with 379 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; Wilhelm Maudrich, Spitalgasse 1B, Wien IX/2, 1947.

This book indicates the magnitude to which physical medicine has grown. The author does not slight technical details and fundamental questions in any of the areas explored. The treatment of electrophysiology, especially electroencephalography, is detailed and modern. Curves are drawn with exactitude, and equations are given in complete and intelligible form. A fine tradition of scholarship, which presupposes on the one hand a precise use of mathematics and, on the other, a correct use of modern languages, is well exemplified in this book. It is particularly illustrated in the long section on diathermy and short wave therapy, probably one of the best summaries of this subject available. This section alone is illustrated by sixty-four figures, all apparently original. They are about equally divided between diagrams explaining theoretic concepts and sketches or photographs showing practical applications.

The author at times traverses shaky ground. On page 472 he refers to the administration of radioactive substances in baths, beverages, compresses and inhalations. A more critical appraisal of the results that have been ascribed to these treatments is desirable. The following statement was made recently by one expert on the subject: "Radium water is not just something to look at askance. If it has any radioactive material in it, it is deadly." While the author repeatedly mentions cautions and the possibility of bad results, there is little indication of the benefits expected as a reward for subjecting the patient to these

dangers. Reports of good results in arthritis and neuritis should be viewed with suspicion.

The style of this book is readable; the sentences are short and unaffected. A 21 page bibliography furnishes an adequate key to the relevant literature. The index is complete and is happily free from exasperating cross references ("Blood pressure: see Pressure, blood") so often encountered in other works.

Recent Advances in Public Health. By J. L. Burn, M.D., D.Hy., D.P.H., Medical Officer of Health and School Medical Officer, City of Salford. Cloth. Pp. 409, with 82 illustrations. J. & A. Churchill, Ltd., 101 Gloucester Place, Portman Square, London, 1947.

This book covers a wide set of subjects classified as recent advances in public health. Its contents satisfactorily cover the rapidly changing social scene and the effect on the public health. Individual, community and environmental health are covered with thoroughness and dispatch; to the American health officer, this book should prove interesting reading and a valuable asset in his daily duties.

The chapter on rural epidemiology is altogether too short, but the author's observations indicate what a fertile field there is in determining the causes and the modes of spread of diseases in rural areas. The lesson to be learned is that every practicing physician is a practical epidemiologist however busy his life.

The briefness of some chapters, such as that on immunization against smallpox may be disappointing to American readers.

The chapter on smokeless air should interest the health officers of communities where advocates of smoke control become unpopular with industry. Dr. Burn makes the observation that millions of tons of soot fall in Great Britain, more than half coming from domestic fires. One chapter has an altogether too brief description of milk pasteurization, and only one method is mentioned. Lapses of procedure of this type are few indeed and generally do not detract from the book's usefulness to health officers.

Qualitative Analysis by Spot Tests: Inorganic and Organic Applications. By Fritz Feigl, Eng., Dr.Sc. Third English edition translated by Ralph E. Osper, Ph.D., Professor of Chemistry, University of Cincinnati, Cincinnati. Cloth. Price, \$8. Pp. 574. Elsevier Publishing Co., Inc., 215 Fourth Ave., New York 3, 1946.

Spot test analysis may one day attain considerable importance for clinical chemistry, as the tests are carried out on small quantities of material without aid of elaborate equipment. When such time arrives, this book will be one of the few available foundations for the expansion of these methods.

The book contains chapters on (1) working methods and special aids in spot test analysis, (2) tests for metals, (3) tests for acid radicals, (4) tests for free elements, (5) systematic analysis of mixtures by spot reactions, (6) use of spot reactions in qualitative organic analysis, (7) application of spot reactions in tests of purity, examination of technical materials and studies of minerals; a bibliography on the application of spot reactions for special scientific or technical purposes and a tabular summary of the limits of identification obtained by spot tests are included.

Each test is prefaced by a few lines on theory and limitations of the test, followed by details of the procedure, limits of identification, concentration limit and reagents used.

Précis de diagnostic hématologique. Par G. Hemmeler, privat-docent à la Faculté de médecine de l'Université de Lausanne. Préface du Prof. Dr. Louis Michaud. Paper. Price, 700 francs. Pp. 168, with 60 illustrations. Masson & Cie, 120 Boulevard Saint-Germain, Paris 6^e; F. Roth & Cie, Lausanne, 1947.

This is a concise, well written and well edited book, containing the essential features of the diseases involving red and white blood cells and platelets. A short section on technical methods, followed by a systematic short description of the disease entities, is included. A résumé follows each section, including clinical symptoms, blood and marrow picture and treatment. The colored plates are satisfactory, comprehensive and serviceable. The book has a remarkable amount of material in condensed form. A bibliography is not given. The compilation should serve as a handy work for quick reference in differential diagnosis of "diseases of blood." This is its primary purpose.

treatment. In the early stages fever therapy (malaria or intravenous typhoid inoculation) if the patient is robust enough seem to do good.

Most important is the local treatment: atropine 1 per cent two or three times a day for the uveitis which always accompanies the keratitis, heat, ethylmorphine hydrochloride, very dark glasses (do not bandage). In the late stages it is customary to use irritating applications designed to hasten the clearing of the cornea, which takes place spontaneously: dry or moist heat, ethylmorphine hydrochloride and yellow oxide of mercury are used. Their benefit is doubtful.

ESOPHAGEAL ULCER

To the Editor:—A patient aged 59, employed as a repairman of large laundry washing machines, found it necessary for him to enter the machine to make the proper repairs. While working over the drain of the machine a gust of fumes appeared. The patient began to cough and only with difficulty was able to get out of the machine. All that night he coughed and complained of pain in his chest and nausea. The cough subsided in a week, but he complained of severe pains across the chest, front and back. The pains continued and increased in severity. The patient then noticed that the pain increased immediately after food. An electrocardiogram was negative. A Sippy diet and the use of alkaline and antispasmodic drugs gave no relief. A gastrointestinal series showed a dilatation of the esophagus at the cardiac orifice of the stomach and a narrowing below the dilatation. The rest of the gastrointestinal tract was negative. I have obtained a partial list of the ingredients of this cleansing powder, and it is as follows: sodium acid bifluoride, sodium silica fluoride and sodium hypochlorite. The pathologic process is an ulcer at the lower part of the esophagus. Could inhalation of the aforementioned substances cause this ulcer? The patient was perfectly well until this accident occurred.

M.D., New York.

ANSWER:—Certain compounds of fluorine are highly toxic. It is well established that under some circumstances peptic ulcers may follow damage such as that from severe cutaneous burns. However, the Curling type of ulcer is almost invariably at the duodenal end of the stomach. In the light of present knowledge of the toxicity of fluorine compounds, it is unlikely that an esophageal ulcer with dilatation and narrowing of the esophagus might be attributed to the episode described. Peptic ulcers do appear on a psychosomatic basis. It is conceivable that undue apprehension related to the pulmonary state may have been a factor in the causation of the esophageal ulceration. The probability of such is remote.

LOW GRADE DIABETES

To the Editor:—A man aged 74 has complained for two months of bad taste and a tight feeling in the throat during the night and early morning; never during the day. I have checked the blood count, blood sugar, nonprotein nitrogen, Wassermann reaction and the urine. The stomach has been x-rayed, and a complete neurologic examination has been made. Blood sugar has been 167 = 164; the last, 117 on a diet. No insulin has been given. Tonsils and teeth have been removed. What would you suggest?

George C. Stimpson, M.D., Poy Sippi, Wis.

ANSWER:—The patient would seem to have a low grade diabetes mellitus, which could be confirmed by a sugar tolerance test. The condition need not include glycosuria or ketonuria. The symptoms are characteristic. A feeling of dryness is most common and may be due both to loss of fluid through the kidneys and to inhibition of salivary secretion. The tendency may be accentuated at night because of absence of fluid intake and possible mouth breathing. In mild diabetes the signs of coated tongue, red mucous membranes and evidences of a low resistance to infection may not be present. They would be less obvious with the teeth gone. They may be due, when present, partly to associated vitamin deficiencies. Diet would seem sufficient to control the diabetes at present. Vitamin concentrates could wisely be given.

PREMATURE WRINKLING OF SKIN OF FACE

To the Editor:—Can you tell me the most effective method to treat wrinkles? My patient is a man of 35 whose face is prematurely wrinkled.

M.D., California.

ANSWER:—Wrinkling is the result of degeneration of the elastic tissue, loss of subcutaneous fat and loss of normal fluid content. Excessive wrinkling of the face may be due to distortion of the skin by the underlying musculature.

In any case there is no satisfactory local method of treatment. Temporary improvement may follow the use of applications which cause superficial inflammation, but the end result is likely to be an increase in the wrinkling.

If the wrinkling is so pronounced as to be considered a deformity, plastic surgery might be of benefit.

BASAL CELL CARCINOMAS

To the Editor:—I am having difficulty in obtaining standard insurance. I had a small basal cell carcinoma of the upper lip removed eighteen months ago with no evidence of recurrence up to the present moment. However, despite this the insurance companies insist on giving out only substandard insurance. Are basal cell tumors correctly classified as "malignant"? What is the likelihood of recurrence of a basal cell tumor after surgical excision? Are there any statistics which show that the incidence of malignant neoplasms of any type is greater in patients who have had basal cell carcinoma than in the general population?

Daniel K. Adler, M.D., Syracuse, N. Y.

ANSWER:—Basal cell carcinomas are malignant. The likelihood of recurrence of a basal cell carcinoma after adequate excision is exceedingly remote. No evidence is available to the effect that the incidence of cancer (excepting cancer of the skin) is greater in patients who have had basal cell carcinoma than in the general population.

NAIL BITING

To the Editor:—A boy aged 6½ years chews his nails. He is nervous, always on the go, very active and intelligent. Can he be trained to overcome the habit?

Arthur E. Perley, M.D., Waterloo, Iowa.

ANSWER:—Chewing nails is a puerile habit and may be associated with other habits of childhood such as thumb sucking, masturbation and finger sucking, although less frequent than the others. It is seen in emotionally unstable and tense children who find some feeling of relief by chewing their nails. There is no danger in the habit. Most of the children quit it of their own accord when they start to meet others socially. Only a few continue to chew or bite their nails in adult life. There is no specific treatment. A rather kindly, pleasant and understanding attitude with the giving of a reward if and when the chewing stops for a period of at least six months may work wonders. At least, this should be tried. One should not threaten or be exceedingly critical of this type of boy, because he will continue to do it.

COMPLICATIONS DUE TO PESSARY

To the Editor:—I have a patient who retained a rubber pessary in her vagina for about six years. What are the usual complications that may occur?

James Frenkil, M.D., Baltimore.

ANSWER:—While it is assumed that the pessary in question is a hard rubber one, even soft rubber pessaries may cause complications. A properly fitted pessary is less likely to cause pressure necrosis. Pressure necrosis may cause a complete dissolution of the protective tissue with resultant inflammatory reaction. Perhaps, more commonly, pessaries react as foreign bodies, producing a vaginitis and becoming encrusted. Any inflammatory reaction produced might give secondary symptoms, particularly if there is lymphatic spread. For instance, it might result in urinary bladder symptoms. Attempts at coitus may cause displacement or change of position of the pessary, as well as trauma.

INFLAMMATION OF THE SWEAT GLANDS

To the Editor:—A patient has a chronic, suppurative folliculitis of both axillae which has been present for three years. Urinalysis is negative, the blood count is normal and guinea pig inoculation is negative for tuberculosis, showing mixed infection due to staphylococci and streptococci. Treatment has been with penicillin, sulfadiazine, wet dressings of tyrothricin, irrigations with chloramine-T ("chlorazene") incision and drainage of abscesses and a three months' treatment with staphylococcus toxoid. The radiologist was not enthusiastic about giving roentgen therapy. Is there any other treatment that might be used to clear up this condition?

R. E. Atkinson, M.D., Crestline, Calif.

ANSWER:—The condition described is typical of that known as hidradenitis suppurativa, inflammation of the sweat glands. All the forms of treatment mentioned are indicated but apparently have been without result. Roentgen radiation is recognized as one of the most effective methods of treatment.

TONSILLECTOMY IN MONGOLOID CHILDREN

To the Editor:—Is there any indication against the removal of the tonsils in mongoloid children? A patient of mine aged 4 years suffers from hypertrophy of the tonsils.

Samuel Newman, M.D., Danville, Va.

ANSWER:—Mongoloid children frequently have hypertrophy of the tonsils. They stand an operation usually as well as any normal child with hypertrophic tonsils. It is, however, inadvisable to perform such an operation too early in childhood. A mongoloid of 4 is really not more than a normal child of 2 to 3 years, and the child should be treated according to his developmental age and not his chronologic age.

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REDUCTION OF MORTALITY FROM PREMATURE BIRTH

Some Practical Measures

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The purpose of this paper is to present our concept of certain problems of prematurity and to discuss the practical measures instituted at the Long Island College Hospital to improve our results in this field.

We consider a premature infant to be any infant born alive who weighs 2,500 Gm. (5 pounds, 8 ounces) or less, whose heart beats or who moves. No lower limit of viability is allowed. This definition is that which is accepted by the American Academy of Pediatrics¹ and must be rigidly adhered to by all institutions and agencies for reports and tabulations if experiences are to be comparable.

That prematurity is a leading cause of death in the United States has recently been reemphasized by the United States Children's Bureau (Dunham²) in an analysis based on reports of the United States Bureau of Census for the year 1944 (the most recent year in which figures are available). Premature birth takes a higher toll of infant life than any other pediatric condition, and it is one of ten leading causes of death among the general population. It was given as the cause of death of 33,120 infants in 1944, most of whom (32,065), as would be expected, died during the first month of life (the neonatal period).

It is gratifying to find now that the national neonatal mortality rate from premature birth has fallen from 14.9 per thousand of all live births in 1933 to 11.4 in 1944. Therefore, infants born prematurely in the United States in 1944 enjoyed about a 20 per cent better chance of survival than those born in 1934.

However, it is startling to note (chart 1) that more than one half of the deaths from prematurity occur during the first twenty-four hours. Such a circumstance clearly indicates that the measures which have been effective of improvement in the past decade should be even more sharply directed against the menaces of this first twenty-four hour period. That period is the

one in which the hazards of prematurity are directly reflective of prenatal and natal occurrences and are greatly influenced by the efforts of the obstetrician.

HOW THE OBSTETRICIAN MAY AID IN REDUCING MORTALITY FROM PREMATURE BIRTH

Mortality from premature birth can obviously be reduced in but two ways, either by an actual over-all reduction in the incidence of premature birth or by improvement in methods of care of the premature infant after birth. The obstetrician not only is entirely responsible for the reduction of the incidence of premature birth but is also concerned in a great measure with the results of pediatric efforts.

The accepted morbidity studies reveal that the majority of deaths of premature infants which occur during the first twenty-four hours are the result of accidents associated with birth, oftenest due to trauma and asphyxia. Such mishaps predominate among infants who weigh less than 1,500 Gm. (3 pounds, 5 ounces). Therefore, not only must the efforts of obstetricians be directed toward lowering the over-all incidence of premature birth, but they must strive persistently for the prolongation of intrauterine life so that the infants' weights will fall within the higher weight groups.

Beck³ stated that the obstetrician must look on the birth of these smaller premature infants as an obstetric failure, a responsibility comparable to having a stillbirth. Accordingly, our first recommendation is the adoption of the measures which he recommended to help the obstetrician in reducing the total incidence of premature birth and in assuring a more viable infant. The high points from his excellent review were:

1. Adequate supervision of the hygiene of pregnancy
2. Proper advice concerning diet, coitus, rest and exercise
3. Immediate notification of the obstetrician whenever any untoward symptoms occur
4. Early discovery of the presence of syphilis and vigorous treatment for it throughout pregnancy
5. Prevention of congestive failure in cardiac disease through joint supervision by cardiologist and obstetrician
6. Determination of the size of the child by means of roentgen ray. Also, consultation with another competent obstetrician before interrupting pregnancy by artificial means
7. Elimination of morphine, scopolamine, barbiturates and general anesthesia in all labors in which prematurity is involved
8. The administration of vitamin K to the mother before pregnancy is interrupted and to all premature infants immediately after birth

Read before the Section on Pediatrics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

1. Round Table Discussion on Prematurity, *J. Pediat.* 8:104-130, (Jan.) 1936.

2. Dunham, E. C.: Unpublished material.

3. Beck, A. C.: Obstetricians' Responsibility for Hazards of the First Days of Life with Special References to Anoxia and Prematurity, *Am. J. Obst. & Gynec.* 51:173-183 (Feb.) 1946; How Can the Obstetrician Aid in Reducing Mortality of Prematurely Born Infants? *ibid.* 42:355-364 (Aug.) 1941.

9. Preservation of the membranes as long as possible and episiotomy to protect the premature infant from the pressure effects of labor

10. Spontaneous delivery of the second twin and avoidance of version and extraction whenever possible

11. Postponement of the tying of the cord until it stops pulsating in order that the child may receive as much blood from the placenta as possible

12. Reception of the newly born premature infant in a tub of warm water to prevent chilling while waiting for the cord to stop pulsating

HOW THE PEDIATRICIAN MAY AID IN REDUCING MORTALITY FROM PREMATURE BIRTH

The United States Children's Bureau⁴ has published minimal standards for the care of premature infants in hospitals and standards and recommendations for hospital care of newborn infants, and these publications decidedly deserve careful study. This bureau reports an appalling absence of such standards in many approved hospitals. In a few localities certain requirements have been established by law.

In general, hospital standards have been developed and maintained in the United States mainly by the organized medical profession and not by legal authority.

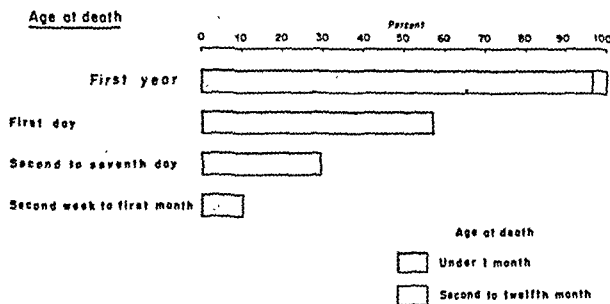


Chart 1.—Age at death of infants that died from premature birth, United States, 1944.—Federal Security Agency, Social Security Administration, United States Children's Bureau (based on data from United States Bureau of the Census).

Therefore it is urged that consideration be given by appropriate committees to the formation and adoption of such standards as requirements in rating and classifying all hospitals which have a maternity service.

While much of the remainder of this discussion concerning measures which have reduced the mortality in premature infants will be common to all improved services, we wish especially to point out those which we believe have been most effective in our own experience. We will not detail our opinions on incubation, nutrition, individual therapy, time of discharge and follow-up care, because they are those generally accepted.

The prematurely born infant's chance of survival at the Long Island College Hospital has improved approximately 30 per cent during the past ten years, and our survival rates compare favorably with reports from other centers. It is our belief that new measures employed in our delivery rooms and extensive alterations in construction and nursing procedures in our nursery units, plus increased facilities and application

of diagnostic procedures are the factors which have been responsible for our improved results.

1. *The Delivery Rooms.*—Our hospital delivery rooms have in readiness at all times a heated crib for the reception of premature infants. In all cases in which a premature birth is expected, the infant is received directly into a warm bath, from which it is ordinarily not removed until it is transported to its nursery bed. Facilities are in readiness for resuscitation and the administration of oxygen. It is our custom to administer oxygen continuously to all prematurely born infants during the first hours after birth and as frequently thereafter as may seem indicated. In several instances we have utilized the services of the department of bronchoscopy before the infant was removed from the delivery room and with such gratifying results that we feel this service should be more frequently used.

2. *The Nursery Unit for Premature Infants.*—It is agreed that the ideal plan for the care of the premature infant would be to have each infant in a separate unit, under the care of its own physician, preferably a pediatrician, and with its own specially trained corps of nurses. That this is generally impossible is admitted.

It is also agreed that a special hospital room designed for premature infants containing not more than 4 such infants as recommended by the United States Children's Bureau⁵ would be the next choice in desirability. However, this plan requires three nurses having no other assigned duties for continuous twenty-four hour service. It also presupposes a full census or bed occupancy for economical and full nursing efficiency. The plan is inelastic and would seem too costly for many hospitals caring for less than 1,500 births annually. A further objection to this plan would seem to be the practical certainty of complete spread of infection to all premature infants in the unit should 1 infant contract a transmissible infection.

It will be evident that attempts to improve facilities for the care of these small infants will be somewhat more difficult in the hospitals with limited space and limited administrative funds. The Long Island College Hospital is a general hospital with limited endowment, consisting of five hundred beds and serving the populous waterfront district of Brooklyn. About 1,500 infants are born annually on our maternity service.

Since 1937 our nurseries have been altered in a rather revolutionary way. These changes were detailed by one of us (Charles A. Weymuller⁶) before this section at its last meeting. We feel that these changes have been in a large measure responsible for our improved results in premature births. Their practicality and inexpensiveness, as well as their success, would seem to justify their review.

Prior to 1937, our nurseries for newborn infants consisted of two large rooms with common weighing, bathing and storage facilities and with an adjacent similar room which served as an isolation unit. The premature infants were cared for in heated cribs in these nurseries, and so were subjected to the numerous actual and potential hazards of such a common arrangement.

4. The Expectant Mother, Children's Bureau Folder 1, United States Department of Labor, Children's Bureau, December 1943. Dunham, E. C., and Crane, M. M.: Standards and Recommendations for Hospital Care of Newborn Infants, Full-Term and Prematures, Publication 292, United States Department of Labor, Children's Bureau, 1943.

5. Dunham, E. C., and others: Plan for Hospital Unit for Premature Infants, Bulletin 9, United States Department of Labor, Children's Bureau, 1942.

6. Weymuller, C. A., and others: Protection of Newborn Infants, J. A. M. A. 133:78-84 (Jan. 11) 1947.

Since 1937 the following corrective measures have been completed:

(1) We have made our nursery units as small as our physical plant would permit (chart 2). Each main unit consists of a room containing sixteen cribs, an adjoining but separate room for weighing and bathing and an examining room partitioned off for the use of physicians. We now have four such main units besides a comparable isolation unit. If we had complete freedom of action we would have eight such clean units containing 8 infants each. The cribs of each unit are arranged in two groups of eight, affording seven beds for term infants and one incubation bed for the premature child. These beds occupy the entire duties of one nurse and are never interchanged.

(2) (a) Unnecessary contacts with visitors have been reduced by limiting visiting hours for ward patients, by the masking and gowning of visitors and by rope barriers which separate them from the beds in each public ward. Visiting hours for private patients have been restricted so far as public opinion has permitted.

(b) Nurses wear masks and gowns while caring for infants in the nurseries. When they are about to come on duty in the nurseries their throats are cultured. If dangerous organisms are found, the nurse is relieved of her duties.

(c) A physician must wear mask, gown and sterile gloves on entrance to any nursery for newborn infants. He must examine the infant in the special examining room attached to every unit unless there is an emergency which takes him into the nursery proper. If the physician passes from one unit to another, he must change his mask, gown and gloves for every unit entered. House officers are assigned to individual nursery units and are not shifted unless they are ill or terminate their service in the nursery. If they become ill, they are relieved of their duties and are studied to ascertain whether their illness will in any way affect the infants who have been under their care. If so, the nursery affected is quarantined, and the infants in it are treated accordingly.

(d) Ward maids and cleaning women in the nurseries are subject to the same regulations as nurses and physicians and are rigidly supervised by both.

(e) Every nursery unit has in its examining room complete medical equipment, so that no contamination can occur by way of stethoscopes, otoscopes or other instruments which might be brought in by the attending or house staffs.

(f) All bedclothing, diapers and clothes for the infants in the nurseries are sterilized by autoclave. Each infant's supply for the day is stored in a shelf under his crib. Thus, only his own nurse comes in contact with his supplies. This is in sharp contrast with the usual practice of having a central supply room.

(3) The measures taken to prevent the spread of infection from infant to infant through an intermediary are as follows:

(a) The assignment of nurses who care for newborn infants has been changed so that one nurse cares for but 7 babies of full term and 1 premature baby. The nurse is assigned for complete care of these infants; that is, she takes them to their mothers to be nursed or gives them their milk mixtures or fluids, bathes them, weighs them and cares for them in every

particular. This personal, individualized service permits the nurses to know in detail the condition of the babies in their charge. If they follow the required technic, they cannot transmit any infection beyond their group, much less beyond the ward of 16 in which they function. This is one of the greatest improvements which we have made and is, we believe, unique.

(b) The formula room is in a section of the hospital entirely removed from the nurseries and from ill patients. It is so arranged that contamination from outside the hospital or from any unit in the hospital is reduced to the minimum. All materials and utensils which enter the formula room pass through the sterilizer, which extends through the wall between it and the anteroom.

(c) Once in the unit, these materials are made into milk mixtures, placed in sterile bottles, capped with sterile nipples and covered with sterile glass caps. Although sterile precautions are taken before and during preparation, it is nevertheless considered that there might be contamination by air, hands or otherwise. Therefore the milk mixtures and other fluids are again sterilized. Repeated cultures of mixtures so prepared have shown that they are sterile.

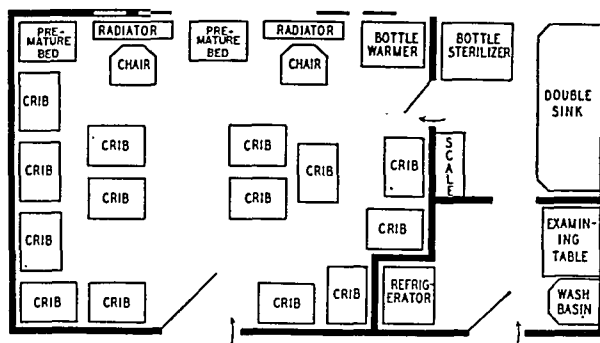


Chart 2.—Nursery for newborn infants, typical unit. Each nurse cares for 7 term and 1 premature infant. The cribs are never interchanged and no common utility room is required.

(d) A common utility room is not needed, because each unit has its bottle warmer, its sterilizer and scrub sink and plenty of utensils. As all utensils are cleansed and sterilized before they leave the unit, contamination cannot be spread to other nursery units or to the formula room.

(e) Proper isolation units are provided for observation of suspected cases. Infants who are known to have transmissible diseases are transferred to the pediatric ward, where rigid isolation technic is observed.

Therefore, if any infant in any unit has infection the following steps are taken:

The affected infant is immediately removed to the pediatric ward and isolated. The unit from which this infant came is closed to further admissions until the hospital physicians feel certain that new cases will not develop. The nursing and medical personnel of the unit involved carefully observe every exposed infant for the development of symptoms. When a contaminated nursery has been finally emptied through routine discharges or transfer to the pediatric services, it is thoroughly washed with soap and water and aired, and it is not reopened for twenty-four hours after cleansing. All cribs and mattresses are specially treated.

Since the changes outlined have been in effect we have noted a definite reduction in infant morbidity in

our nurseries. A careful study of some twenty thousand records is now being made to evaluate in detail our morbidity experiences before and since these changes were completed. We feel that, because of the extreme susceptibility and low resistance of the prematurely born infant, this reduction in morbidity has been greatly responsible for the decrease in the fatality rate of our premature infants.

3. *Diagnostic Facilities.*—We have provided all the accepted diagnostic aids of proved value in the study and management of the term infant, and the pediatric staff liberally utilizes them in the care of premature infants as well. These include facilities for bedside roentgenograms, bronchoscopic and urologic consultations, hematologic and immunologic studies (especially of Rh typing and agglutinations and the use of Rh-negative blood transfusions), blood chemical determinations and bacteriologic and pathologic studies.

4. *Records and Staff Supervision.*—Too frequently in the past the records of the premature infants in our own hospital were noted to be incomplete, which may or may not indicate that the necessary observations and procedures had not been made. There seems to be a special tendency among interns and even some staff physicians to neglect the premature infant. Routine diagnostic measures are sometimes omitted and too

Jan. 1, 1945, 9,084 living infants were born on the same service and 637 of these weighed less than 2,500 Gm., or an incidence of premature birth of 7.0 per cent. Of these infants who were prematurely born, 104 succumbed; a fatality rate of 16.3 per cent, which, as mentioned, represents an over-all improvement of approximately 30 per cent. These improved fatality rates are especially obvious when the percentage rates for each of the four standard weight groups are directly compared (the table).

Thus it will be seen that not only has our over-all fatality rate fallen since 1940, but a gratifying improvement has been made in each weight division.

While these improved results are, we feel, primarily due to the changes effected in our methods of caring for all infants in the nurseries for newborn infants, we feel that the obstetric procedures outlined previously have aided us immeasurably in reducing the fatality rate of the smaller infants. Although the actual incidence of premature birth has not been lowered and analysis reveals that the percentage incidence of birth of the smaller infants (1,500 Gm. or less) has not been materially decreased, we are convinced that in general these smaller infants are now more vigorous and show less morbidity than in the earlier years. It is possible that our present morbidity studies will support this impression.

SUMMARY AND CONCLUSIONS

The official definition of premature birth, "every living infant whose weight at birth is 2,500 Gm. (5 pounds, 8 ounces) or less," should be accepted by every hospital having a maternity service.

Mortality from premature birth is the chief cause of pediatric deaths in the United States.

Mortality rates from premature birth can undoubtedly be improved by obstetricians through a reduction in the total incidence of premature birth and especially by reducing the incidence of birth of infants whose weights are less than 1,500 Gm. (3 pounds, 5 ounces). Methods that may aid in effecting these aims are outlined.

A method for the care of premature infants in small nursery units containing 1 premature infant and 7 (or less) term babies is outlined. The infants in this unit receive their complete care from one nurse. The plan is fully discussed and is recommended for the smaller institution which cannot finance the added nursing cost of maintaining a separate unit for premature infants. The improved fatality rates since this plan has been adopted at the Long Island College Hospital are reviewed.

ABSTRACT OF DISCUSSION

DR. CHARLES C. CHAPPLE, Philadelphia: The paper by Koch and his group suggests some queries regarding the relative importance of various measures for the care of premature infants. For example, was infection a large or small factor in the mortality? In the Children's Hospital of Philadelphia, we use the same type of incubator for the care of premature infants as does the Long Island College Hospital, but we have no direct connection with an obstetric service. The infants are brought in from their homes or other hospitals. In ten years of use of this device, we have had a low morbidity with no infections of the respiratory tract whatever. The low morbidity is in spite of the fact that most of the care is given these infants by student nurses who are frequently changed, with but a single graduate nurse as ward supervisor, and that, for more than a year, it was necessary to keep the premature infants in an open ward with sick infants where well and sick alike

Fatality Rates Among Premature Infants at the Long Island College Hospital, 1924 to 1940 and 1940 to 1945

Period	Number of Live Births	Number Weighing 2,500 Gm. or Less	Incidence of Premature Births, Per centage	Fatality Rate					Total 2,500 Gm. or Less
				Less Than 1,000 Gm.	1,000-1,500 Gm.	1,501-2,000 Gm.	2,001-2,500 Gm.		
1924-1940	16,757	1,125	6.6	97.0	66.3	41.1	10.3		28.4
1940-1945	9,084	637	7.0	92.0	41.4	18.3	4.6		16.3

frequently diagnostic or therapeutic measures are not instituted until severe morbidity has developed, and then there is hesitation to carry out such measures because of the small size of the infant. Successful and life-saving bronchoscopic measures and major surgical procedures are now common experiences and should never be avoided because the patient is premature.

It is essential that the neonatal morbidity and mortality of the premature infants be carefully reviewed at the regular staff conferences with the joint attendance of all members of the pediatric, obstetric and pathology departments. In addition, we feel that all hospitals having a maternity service should make a yearly tabulation of their experiences in accordance with the accepted method of division into the four standard weight groups, which are those weighing less than 1,000 Gm., 1,001 to 1,500 Gm., 1,501 to 2,000 Gm. and 2,001 to 2,500 Gm. This will allow each hospital to evaluate accurately and compare its results with those in other institutions.

MORTALITY FROM PREMATURE BIRTHS AT THE LONG ISLAND COLLEGE HOSPITAL

From Jan. 1, 1924, until Jan. 1, 1940, 16,757 living infants were born at the Long Island College Hospital, and 1,125 of these weighed 2,500 Gm. (5 pounds, 8 ounces) or less at birth, an incidence of premature birth of 6.6 per cent. Of these 1,125 prematurely born infants 320 died, an over-all mortality from premature birth during this sixteen year period of 28.4 per cent.

From 1940, a period representative of completed changes in our nursery units for newborn infants, to

were cared for by the same nurses. This was possible because the incubators circulate only outdoor air and the infants in them are completely isolated except from contact with the nurse's hands, which she washes frequently and carefully. Since the hands are the only possible contact, the nurse does not wear mask or gown; and as the temperature and humidity maintained about each infant are independent of the ward, the ward is kept at a comfortable temperature, with no attempt to reach that required by the infants. Consequently fewer infections of the respiratory tract develop among the nurses. The gross mortality of our premature infants has been greatly reduced, largely because of the elimination of respiratory infection. Dr. Koch and associates have covered the subject of the reduction of mortality in prematurity in a comprehensive manner. Their division of nurseries into separate units of infants, nurses and infants' supplies is a real contribution. The ultimate low in mortality of premature infants should be reached by such united efforts of the obstetric and pediatric services.

Dr. LEWIS A. KOCH, Brooklyn: We certainly feel that infection was one of the major causes of early mortality in past years, and its incidence has definitely been reduced. That is due not only to our better method of distributing our nursing load and care but, to some extent, also to the better treatment, antibiotic therapy and the like, which we now have available.

NEWBORN MORTALITY AND MORBIDITY WITH CONTINUOUS CAUDAL ANALGESIA

An Analysis of Cases in New York, Philadelphia and
Memphis, with Controls

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Recognizing that the principles of prolonged narcosis in labor and general anesthesia for delivery are fundamentally dangerous for the baby, obstetricians in great numbers are filling the literature with reports of greater salvage of infants through management of labor and delivery with nerve conduction anesthesia through technics of local, pudendal and presacral block, spinal and continuous spinal, and saddleblock spinal anesthesia and caudal and continuous caudal analgesia.

Since 1942 there have been published two hundred and sixty-four papers in the medical literature recording results in more than 600,000 cases with continuous caudal analgesia used for the management of labor and delivery. Most of these reports have emphasized the well-being of the newborn infant who, with this technic, has escaped the penalty of transplacental narcosis from sedative drugs and general anesthetics.

In this report we have analyzed results in a significant number of deliveries from the U. S. Marine Hospital in New York, from the Philadelphia Lying-In Hospital

The Office of Health Statistics and Methods of the United States Public Health Service assisted in the statistical phases of this paper.
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Because of lack of space this article has been abbreviated in THE JOURNAL. The complete paper will be found in the authors' reprints which the authors will be pleased to send on request.

From the Departments of Obstetrics of the U. S. Marine Hospital, Staten Island, N. Y., the Philadelphia Lying-In Hospital and the John Gaston Hospital, Memphis. Surgeons, United States Public Health Service (Drs. Hingson and Edwards) and Senior Assistant Surgeon, United States Public Health Service (Dr. Franklin).

and from the John Gaston Hospital in Memphis, Tenn. We have made a comparison in the latter two hospitals with control series managed with other forms of relief of pain. Coincidentally, in the John Gaston Hospital we have presented a series of 577 cases in which no form of drug therapy was administered for relief of pain either during labor or during delivery.

The New York report covering more than four years' work in the obstetrical department of the U. S. Marine Hospital on Staten Island is submitted as a model example of conservation of infant life where the regional methods of nerve block for delivery are used in 92.7 per cent of all cases. In this series of 1,687 cases there was 1 maternal death.

We have analyzed the combined stillbirth and neonatal mortality in these three hospitals, which data are presented in table 1.

Even though we were impressed with the total salvage of babies under the management of continuous caudal analgesia, certain dangers of the method have become apparent, and certain limitations from the obstetric point of view have presented themselves. These dangers and limitations in order of their significance are:

1. Primary intrauterine fetal anoxia as a result of the sometimes moderate to severe hypotension which develops in the mother from conduction nerve block of the vasomotor nerves. Whenever the maternal blood pressure remains below 80 mm. of mercury for several minutes during labor, the resting and contracting uterine tone is conceivably greater than the arterial pressure. Clinically we have determined that this fetal anoxia is demonstrable in almost every case in which this condition is allowed to exist for five minutes or longer.

Should this condition remain uncorrected it would result in an overwhelming fetal anoxia. For this reason whenever the regional methods of nerve block are used the safeguards of facilities for high oxygen inhalation, vasopressor drugs, intravenous fluids and knowledge of the institution of autotransfusion through elevation of the mother's lower extremities to right angles with the long body axis should be readily available. Baby life has been lost and will continue to be lost when these warnings go unheeded.

2. Arrested and prolonged labors as a result of too early administration of the analgesia before the processes of labor have become established, in desultory and false labors, and as a result of extension of the anesthetic levels through somatic segments higher than the sixth thoracic, and to prolonged dependent migration of the anesthetic solutions through the sieve-like openings of the anterior sacral foramina involving Frankenhäuser's ganglions. These latter two errors in judgment and technic block significant motor pathways and absolutely arrest or make ineffectual the processes of labor.

3. Increased incidence of occipitoposterior positions. In some series this incidence is almost doubled over that usually considered normal.

4. Increased incidence of operative deliveries with a diminution in the incidence of spontaneous expulsion of the fetus.

5. Occasional direct transplacental fetal hypersensitivity to the local anesthetic used, as has been reported by Irving and others¹ and Siever and Mousel.²

1. Irving, F. R.; Lippincott, C. A., and Meyer, F. C.: Continuous Caudal Anesthesia in Obstetrics: Demonstration of Catheter Technic for Administration, New York State J. Med. 43: 1023-1029, 1943.

2. Siever, J. M., and Mousel, L. H.: Continuous Caudal Anesthesia in Three Hundred Unselected Cases, J. A. M. A. 122: 424-426, 1943.

With these hazards constantly in mind, we have sought to supervise the labors and deliveries managed under this technic with careful surveillance of the mother and the infant.

Since our own series of cases so managed is the first and largest series managed with continuous caudal

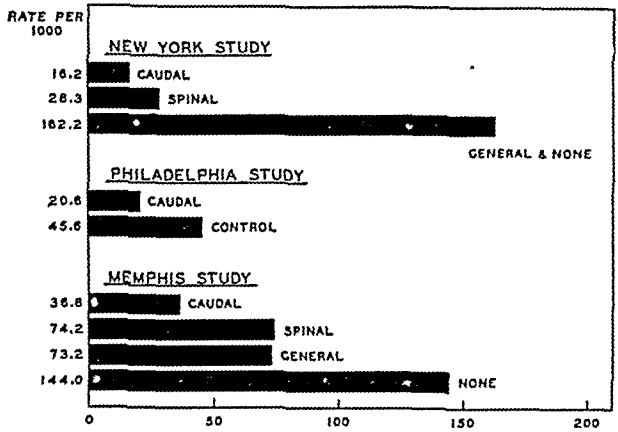


Chart 1.—Stillbirths and neonatal deaths per thousand live births, studies in three cities.

analgesia, we have spent months in analyzing for the medical profession the effect of this technic on the fetal mortality in the hospitals reporting this study. We have divided this study into two main divisions in order to compare results from two geographic areas.

In the Philadelphia series 87.6 per cent of the mothers were white and 12.4 per cent were Negro, while in the Memphis series 82.1 per cent were Negro and 17.9 per cent were white. The combined study involves an analysis of 7,893 births in 5,059 of which the mothers were delivered under continuous caudal analgesia and in 2,834 under some other method.

THE PHILADELPHIA STUDY

In a statistical analysis previously published by two of us, we analyzed the results of the delivery with continuous caudal analgesia of 2,516 mothers as compared with a control group of 1,024 mothers delivered with the usual anesthetics and sedatives. All the deliveries took place at the Philadelphia Lying-In Unit of the

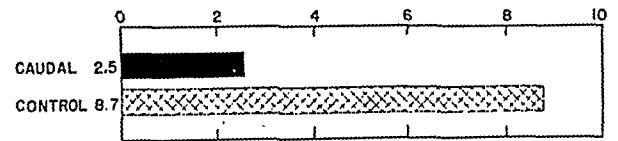


Chart 2.—Percentage of infants who required a special agent to induce respiration in the caudal and control groups.

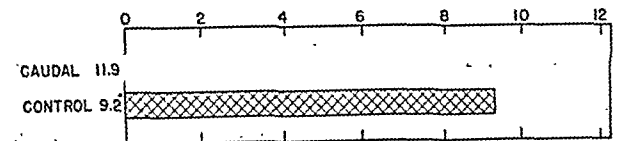


Chart 3.—Percentage of infants who made a net gain in weight by the seventh day of life in the caudal and control groups.

Pennsylvania Hospital. In the control group 62 per cent of the mothers were delivered with nitrous oxide and ether, 30 per cent with nitrous oxide alone, 2 per cent with ether alone, 0.4 per cent with other anesthetics and 5.6 per cent without an anesthetic. Data about mothers in the two groups indicate that when

they came to delivery they were comparable with respect to age, parity, state of health and many other factors that might influence the outcome of childbirth. The following material is extracted from the Philadelphia report.³

The delay in respiration of the newborn infant and the necessity for a special agent to induce respiration may be indications of the effect on the infant of anesthetics given to the mother during labor. Table 2 shows the proportion of infants discharged alive from the hospital in whom respiration was delayed for more than two minutes or in whom special agents were used to induce respiration. Among those delivered by continuous caudal analgesia, the group of infants who had difficulty in breathing amounted to 3.6 per cent of the total, as compared with 9.6 per cent of the control group, a difference which is definitely significant. In the caudal group 2.5 per cent of the infants required the use of a special agent to induce respiration as compared with 8.7 per cent in the control group, a difference which is also definitely significant (chart 2). In the caudal group there were 143 premature⁵ infants

TABLE 1.—Three Infant Mortality Studies

Type of Anesthetic	Rate per 1,000 Live Births			Number		
	Neonatal* Stillbirths	Neonatal* Mortality	Stillbirths	Live Births	Neonatal Deaths*	Stillbirths
New York Study, 1943-1947 (U. S. Marine Hospital, Staten Island)						
Caudal.....	16.2	8.1	8.1	1,232	10	10
Spinal.....	28.3	15.7	12.6	318	5	4
Others.....	162.2	72.1	90.1	111	8	10
Total.....	28.2	13.8	14.4	1,661	23	24
Philadelphia Study, 1942-1945 (Philadelphia Lying-In Hospital)						
Caudal.....	20.6	11.5	9.1	2,523	29	23
Control....	45.6	20.8	24.8	1,069	21	25
Total.....	27.7	14.2	13.6	3,592	50	48
Memphis Study, Calendar Year 1946 (John Gaston Hospital)						
Caudal.....	36.8	18.4	18.4	1,248	23	23
Spinal.....	74.2	20.0	45.2	310	9	14
General.....	73.2	16.9	56.3	355	6	20
None.....	144.0	63.6	80.4	535	34	43
Total....	70.1	30.5	39.6	2,526	77	100

* Neonatal includes deaths under 1 week only, except in New York study, in which it includes the few who died in the hospital after 1 week.
† Total includes also 34 instances of saddle block, 41 of loca and pudendal and 3 of epidural analgesia.

who were discharged alive from the hospital, and 48 such infants in the control group. Of the 143 premature infants in the caudal group, 13 or 9.1 per cent had a delay of more than two minutes before respiration began or had a special agent to induce respiration, as compared with 12 or 25 per cent in the control group. Of these premature infants who experienced difficulty in breathing, all except 3 in the caudal and 1 in the control group required a special agent to induce respiration.

The infants were under direct observation only for the short period that they were in the hospital. Since the duration of the hospital stay varied, it seemed better to compare the weight of the infant at 7 days of age with his birth weight than to consider weights at the

3. Collins, S. D.; Phillips, F. R.; Oliver, D. S., and others: A Statistical Study of Delivery with Caudal Analgesia, as Compared with Other Methods, Pub. Health Rep. 61: 1713-1735 (Nov. 29) 1946.
4. The fourfold table and chi square were used to test the statistical significance of the differences between the caudal and control groups with respect to the several measures that are expressed in rates or percentages.
5. Infants with birth weights of 5 pounds, 8 ounces (2,500 Gm.), or less, were classed as premature, in accordance with the standard adopted by the American Pediatric Society.

time of discharge from the hospital. Table 3 shows for the caudal and control groups the percentage of infants who had made a net gain of 1 or more ounces (28.3 Gm. or more) by the seventh day of life. Considering all infants, 11.9 per cent of those in the caudal group made such a net gain in weight in the first seven days of life, as compared with 9.2 per cent in the control group (chart 3). A difference of this magnitude is of doubtful or borderline significance in the statistical sense

per infant for the caudal group as compared with 3.39 ounces (96.1 Gm.) for the control group. For bottle-fed infants the corresponding average weights at birth were 7.02 pounds (3,175.71 Gm.) and 7.05 pounds (3,176.56 Gm.), respectively, and during the first week of life there was a net loss of 5.52 ounces (156.5 Gm.) per infant for the caudal group as compared with 5.77 ounces (163.6 Gm.) for the control group.

TABLE 2.—*Delay in Respiration of Two or More Minutes Among Full Term and Premature Infants Discharged Alive from the Hospital*

Term	Percentage				Number					
	Infants with Delayed Respiration *		Infants Requiring Special Agent		Infants with Delayed Respiration *		Infants Requiring Special Agent		All Infants Discharged Alive	
	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control
All infants.....	3.6	9.6	2.5	8.7	89	94	62	85	2,488	981
Full term.....	3.2	8.8	2.2	7.9	76	82	52	74	2,345	933
Premature.....	9.1	25.0	7.0	22.9	13	12	10	11	143	48

* Includes infants requiring special agent for respiration.

† Premature includes infants weighing 5 pounds, 8 ounces (2,500 Gm.) or less.

TABLE 3.—*Percentage of Infants with a Net Gain in Weight by the Seventh Day of Life by Color and Type of Feeding*

Group	Total			White			Negro		
	All Infants	Breast Fed	Bottle Fed	All Infants	Breast Fed	Bottle Fed	All Infants	Breast Fed	Bottle Fed
	Percentage with Net Gain of 1 or More Ounces								
Caudal.....	11.9	14.6	5.6	11.2	14.1	4.8	17.0	17.7	14.3
Control.....	9.2	12.5	4.9	8.9	12.4	4.6	13.2	14.3	10.5
Total Number with Known Weights									
Caudal.....	2,457	1,753	734	2,187	1,516	671	300	237	63
Control.....	987	559	428	919	510	409	68	49	19

TABLE 4.—*Distribution of Infants According to Weight at Birth*

Birth Weight in Pounds and Ounces	Percentage				Number			
	Total Infants (Live and Still)		Single Live Births		Total Infants (Live and Still)		Single Live Births	
	Caudal	Control	Caudal	Control	Caudal	Control	Caudal	Control
Total.....	100	100	100	100	2,544	1,030	2,464	990
Under 4-8.....	2.4	4.1	1.3	2.2	62	42	32	22
4-8 to 4-15.....	1.2	1.1	0.9	0.8	30	11	22	8
5-9 to 5-7.....	2.6	2.0	2.4	1.8	67	21	58	18
5-8 to 5-15.....	5.8	6.0	5.6	5.9	147	62	139	58
6-9 to 6-7.....	11.4	10.8	11.4	11.0	291	111	282	109
6-8 to 6-15.....	17.9	16.2	18.2	16.9	455	168	449	167
7-9 to 7-7.....	20.2	19.3	20.7	20.0	514	199	509	198
7-8 to 7-15.....	16.7	17.5	17.2	18.0	426	180	423	178
8-9 to 8-7.....	10.6	11.0	10.9	11.3	270	113	269	112
8-8 to 8-15.....	5.9	5.8	6.1	5.9	150	60	150	58
9-9 to 9-7.....	3.3	3.2	3.4	3.2	84	33	83	32
9-8 to 9-15.....	1.4	2.1	1.4	2.2	35	22	35	22
10 and over.....	0.5	0.8	0.5	0.8	13	8	13	8
Average Weight (Pounds)								
All infants.....	7.14	7.11	7.21	7.22	2,544	1,030	2,464	990
Twins.....	4.76	4.92	4.77*	4.92*	59	18	57*	18*
Number of Births								

* These figures refer to live twins; weight refers to that of each twin.

in that although probably real it may have been due to chance.

Table 4 and chart 4 show the distribution of the infants in the caudal and control groups according to weight at birth. The average weights at birth were 7.14 pounds (3,238.6 Gm.) for the caudal and 7.11 pounds (3,225 Gm.) for the control group, and the distributions of birth weights in the two groups were similar. In the caudal group the average weight at birth for infants who were breast fed was 7.21 pounds (3,270.4 Gm.) as compared with 7.30 pounds (3,311.2 Gm.) in the control group. During the first week of life there was a net loss of 3.75 ounces (106.3 Gm.)

Thus a higher percentage of infants in the caudal group showed a net gain during the first week of life, but, in terms of average ounces lost for all infants in the two categories, the differences between the caudal and control groups were small and not consistently in favor of either group.

Among infants in the caudal group, stillbirths amounted to 9.1 per thousand live births, as compared with 24.8 per thousand in the control group, a difference which is definitely significant (chart 5). Corresponding ratios for white stillbirths were 8.1 per thousand live births for the caudal and 23.4 per thousand for the control group; and for the few Negro still-

births, 16.1 per thousand live births for the caudal and 42.9 per thousand for the control group (table 5). The difference between caudal and control groups is statistically significant for white stillbirths, but in the small Negro groups even this large difference may have resulted from chance.

Since the infants were under observation only for the short time in the hospital and since the hospital stay varied for different mothers and infants, neonatal deaths were defined as those which occurred within the first week of life, practically all mothers being in the hospital for that minimum period.

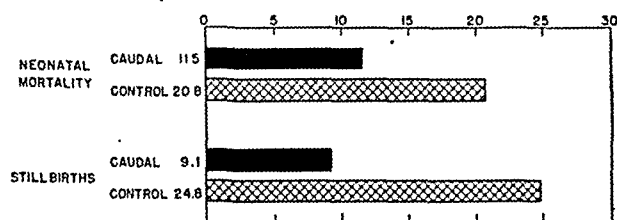


Chart 5.—Stillbirths and neonatal mortality per thousand live births in the caudal and control groups.

Deaths in the first week of life in the caudal group amounted to 11.5 per thousand live births, as compared with 20.8 per thousand in the control group (chart 5). The corresponding figures in the white group were

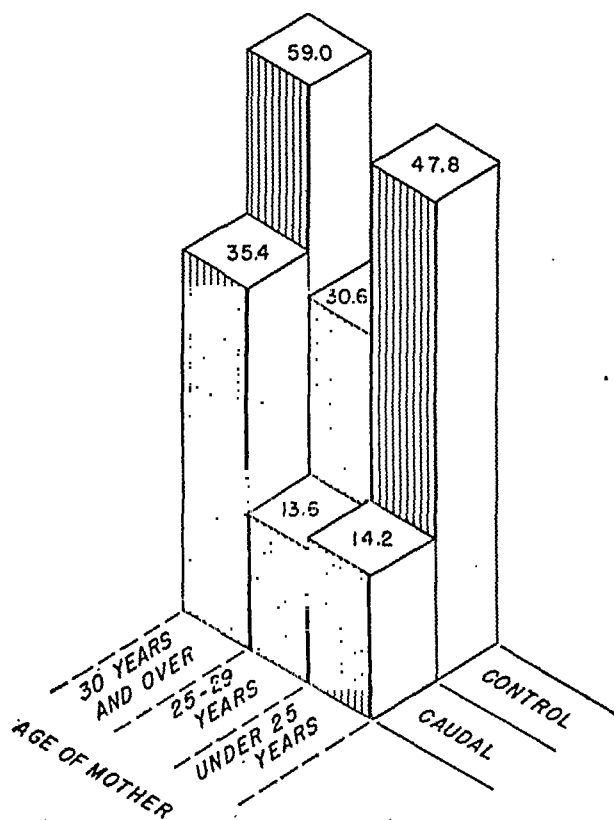


Chart 6.—Stillbirths and neonatal mortality per thousand live births among mothers of different ages in the caudal and control groups.

9.0 per thousand live births for the caudal and 20.2 per thousand for the control group, and for the Negro, 29.0 per thousand live births for the caudal and 28.6 per thousand for the control group (table 5). A difference of such a magnitude as that between the rates for white infants in the caudal and control groups is

statistically significant, but the two rates for Negro infants are essentially the same. It may be noted that the mortality of the first week of life of 20.8 per thousand live births for all infants in the control group was approximately the same as that for the country as a whole—22.3, 20.8, 19.9 and 20.0 per thousand

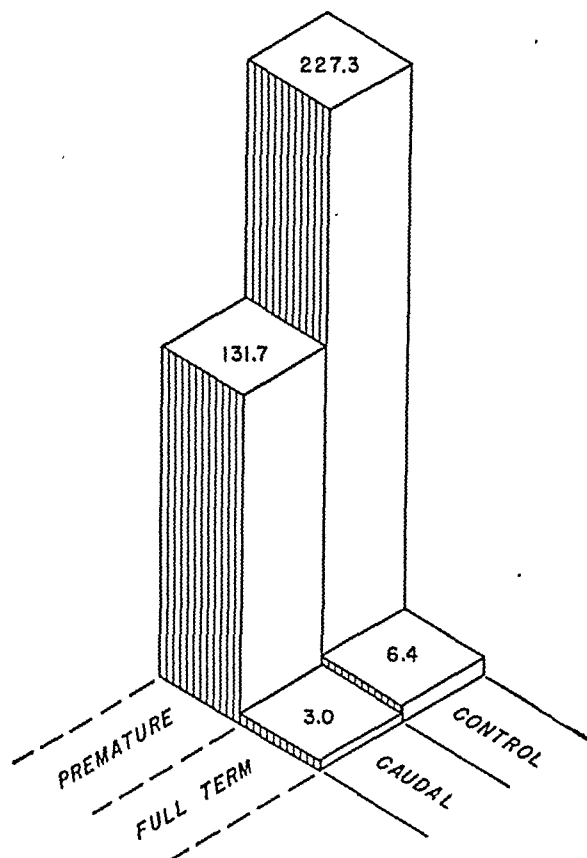


Chart 7.—Neonatal mortality per thousand live births among full term and premature infants in the caudal and control groups.

live births for the years 1941, 1942, 1943 and 1944, respectively.

Taking into account both stillbirths and neonatal deaths, the total loss of infants amounted to 20.6 per thousand live births in the caudal group, as compared with 45.6 per thousand in the control group, a difference which is definitely significant (table 5). Among white infants the corresponding rates were 17.2 per thousand live births for the caudal and 43.7 per thousand for the control group, a difference which is also definitely significant. Among the Negro infants the corresponding rates were 45.2 per thousand live births in the caudal group and 71.4 per thousand in the control group. In the small group of Negro mothers, even this large difference between the rates for the caudal and control groups may have occurred by chance; that is, it is not statistically significant.

Chart 6 shows stillbirth and neonatal mortality in the caudal and control groups among infants of mothers of three age groups: under 25 years, 25 to 29 and 30 years and over. The higher stillbirth and neonatal mortality rates in the control group are consistent for all three age groups of mothers.

It is generally recognized that premature infants have a high neonatal mortality, but there are few data on actual death rates among premature as compared with

TABLE 5.—Stillbirths and Neonatal Mortality* per Thousand Live Births Among Mothers of Different Ages, by Color

Group	Rate per 1,000 Live Births						Number				
	All Infants			Infants of Mothers			All Infants		Infants of Mothers		
	Total	White	Negro	Under 25	25-29	30 and Over	White	Negro	Under 25	25-29	30 and Over
Stillbirths and neonatal mortality*											
Caudal.....	20.6	17.2	45.2	14.2	13.0	35.4	38	14	12	12	28
Control.....	45.0	43.7	71.4	47.8	30.0	59.0	41	5	14	11	21
Neonatal mortality*											
Caudal.....	11.5	9.0	29.0	8.3	11.3	15.2	20	0	7	10	12
Control.....	29.8	20.2	28.6	20.5	11.1	30.9	19	2	6	4	11
Stillbirths											
Caudal.....	9.1	8.1	16.1	5.9	2.3	20.2	18	5	5	2	16
Control.....	21.8	23.4	42.0	27.3	19.4	28.1	22	3	8	7	10
Total live births											
Caudal.....	..	..	..	..	..	..	2,213	310	847	884	792
Control.....	..	..	..	..	..	..	919	70	293	300	356

* Neonatal mortality includes deaths within the first week of life only.

TABLE 6.—Neonatal Mortality* Among Full Term and Premature Infants

Group	Neonatal Mortality* per 1,000 Live Births			Number of Neonatal Deaths*			Number of Live Births		
	All Infants	Full Term	Premature †	All Infants	Full Term	Premature †	All Infants ‡	Full Term	Premature †
Caudal.....	11.5	9.0	131.7	29	7	22	2,523	2,354	167
Control.....	29.8	6.4	227.3	21	6	15	1,009	942	66

* Neonatal mortality includes deaths within the first week of life only.

† Premature includes infants weighing 5 pounds, 8 ounces (2,500 Gm.) or less.

‡ Includes a few unknown for maturity.

TABLE 7.—Memphis Study, 1946 (Negro and White): Distribution of Infants According to Weight at Birth

Birth Weight in Pounds and Ounces	Total Infants (Live and Still)				Single Live Births			
	Caudal	Spinal	General	None	Caudal	Spinal	General	None
	Percentage							
Total.....	100	100	100	100	100	100	100	100
Under 2-8.....	0.9	1.3	1.6	5.9	0.3	0.3	0.3	3.3
2-8 to 2-15.....	0.4	...	1.4	0.7	0.3	...	0.6	0.4
3.0 to 3.7.....	0.8	0.3	1.4	2.0	0.4	0.3	0.6	1.8
3.8 to 3-15.....	1.1	2.5	1.1	2.1	0.8	2.8	0.9	1.2
4.0 to 4.7.....	2.1	2.8	0.8	1.6	1.5	3.1	0.3	1.6
4.8 to 4-15.....	2.4	4.1	3.3	3.9	2.2	4.1	2.5	3.3
5.0 to 5-7.....	5.8	4.7	6.0	3.9	5.5	4.1	5.2	4.1
5-8 to 5-15.....	8.8	8.0	9.9	8.6	8.5	8.3	9.8	8.2
6.0 to 6-7.....	15.3	15.2	13.4	15.2	15.8	14.8	13.2	13.7
6-8 to 6-15.....	17.7	15.8	13.7	15.2	18.3	16.6	14.5	16.4
7.0 to 7-7.....	17.1	15.6	17.0	16.4	18.0	15.9	18.8	17.8
7-8 to 7-15.....	13.0	12.0	12.6	10.0	13.6	12.4	13.8	10.4
8.0 to 8-7.....	6.9	7.0	10.7	6.1	7.3	7.6	21.7	6.6
8-8 to 8-15.....	4.3	4.7	3.8	6.1	4.1	4.8	4.3	6.6
9.0 to 9-7.....	1.9	2.2	1.9	1.8	2.0	2.4	2.2	2.0
9-8 to 9-15.....	1.3	1.9	0.8	1.6	1.3	2.1	0.6	1.8
10 and over.....	0.2	0.9	0.5	0.9	0.2	0.3	0.6	1.0
Mean weight (lb.).....	6.82	6.80	6.81	6.66	6.90	6.83	6.98	6.82

TABLE 8.—Memphis Study, 1946 (Negro and White, Under One Week): Stillbirths and Neonatal Mortality* Among Full Term and Premature Infants

Type of Anesthesia	Total			Premature †			Total			Premature †		
	All* Infants	3 Lb. and Over	Full Term	All* Infants	3 Lb. and Over	Full Term	All* Infants	3 Lb. and Over	Full Term	All* Infants	3 Lb. and Over	Full Term
Stillbirths and Neonatal Deaths per 1,000 Live Births												
Caudal.....	36.9	28.2	15.0	173.7	114.7	18.4	14.5	6.6	95.8	70.1	18.4	13.7
Spinal.....	74.2	64.9	47.7	220.0	100.7	29.0	22.7	4.0	160.0	125.0	45.2	42.2
General.....	73.2	48.6	20.3	333.3	173.9	16.9	8.6	3.4	98.0	43.5	56.3	40.0
None.....	143.0	83.3	25.2	681.8	376.8	63.6	34.9	11.5	318.2	173.9	80.4	48.4
Number of Live Births												
Caudal.....	1,248	1,238	1,068	167	157	23	18	7	16	11	23	17
Spinal.....	310	308	252	50	48	9	7	1	8	6	14	13
General.....	355	350	296	51	46	6	3	1	5	2	20	14
None.....	535	516	436	88	69	34	18	5	28	12	43	25
Number of Neonatal Deaths												
Caudal.....	14	13	11	13	7	1	1	1	1	1	1	1
Spinal.....	14	13	11	13	7	1	1	1	1	1	1	1
General.....	14	13	11	13	7	1	1	1	1	1	1	1
None.....	14	13	11	13	7	1	1	1	1	1	1	1
Number of Stillbirths												
Caudal.....	14	13	11	13	7	1	1	1	1	1	1	1
Spinal.....	14	13	11	13	7	1	1	1	1	1	1	1
General.....	14	13	11	13	7	1	1	1	1	1	1	1
None.....	14	13	11	13	7	1	1	1	1	1	1	1

* Includes a few unknown for maturity.

† Premature includes infants weighing 5 pounds, 8 ounces (2,500 Gm.) or less

full term infants. In this study there were 167 premature infants in the caudal group and 66 in the control. In the caudal group neonatal mortality was 132 per thousand premature live births, as compared with 227 per thousand in the control group (chart 7 and table 6). In this small group of premature infants, a difference of this magnitude or larger would occur by chance seven times in one hundred trials and cannot be considered as statistically significant. Among full term infants the neonatal mortality rates were 3.0 and

form of regional nerve block anesthesia was utilized in every case, so that there was no selection of a general anesthetic or of no anesthetic for any one particular case.

Table 7 and chart 8 show the distribution of infants in the caudal, spinal, general and no anesthesia groups according to weight at birth. The average weights at birth were 6.82 pounds (3,093.5 Gm.) for the caudal group, 6.80 pounds (3,084.4 Gm.) for the spinal, 6.81 pounds (3,089 Gm.) for the general and 6.66 pounds

TABLE 9.—*Memphis Study, 1946 (Negro and White, Under One Week): Stillbirths and Neonatal Mortality per Thousand Live Births Among Mothers of Different Ages*

Type of Anesthetic	Rate per 1,000 Live Births				Infants of Mothers			
	All Infants	Under 25 Years	25-29 Years	30 Years and Over	All* Infants	Under 25 Years	25-29 Years	30 Years and Over
Stillbirths and neonatal mortality								
Caudal.....	36.0	32.0	40.0	52.6	46	27	7	11
Spinal.....	74.2	70.8	46.5	60.0	23	15	2	3
General.....	73.2	45.1	150.1	131.1	26	11	7	8
None—total infants.....	143.9	164.6	103.2	150.9	77	39	13	24
None—infants 3 lb. and over.....	83.3	85.6	66.9	108.3	43	19	7	17
Neonatal mortality								
Caudal.....	18.4	15.4	22.0	23.0	23	13	4	5
Spinal.....	29.0	37.7	....	....	9	8	..	..
General.....	16.0	12.3	22.7	32.5	6	3	1	..
None—total infants.....	63.6	84.4	47.6	50.3	34	20	6	8
None—infants 3 lb. and over.....	34.0	40.5	24.4	38.2	18	9	3	6
Stillbirths								
Caudal.....	18.4	16.6	17.1	28.7	23	14	3	6
Spinal.....	45.2	33.0	46.5	60.0	14	7	2	3
General.....	56.3	32.8	136.4	98.4	20	8	6	6
None—total infants.....	80.4	80.2	55.6	100.6	43	19	7	16
None—infants 3 lb. and over.....	48.4	45.0	32.5	70.1	25	10	4	11
Total live births								
Caudal.....	....	....	....	....	1,248	844	175	200
Spinal.....	....	....	....	....	310	212	43	50
General.....	....	....	....	....	355	244	44	61
None—total infants.....	....	....	....	....	535	237	126	150
None—infants 3 lb. and over.....	....	....	....	....	516	222	123	157

* Includes a few with unknown age of mother.

TABLE 10.—*Memphis Study, 1946 (Negro and White, Deaths Under One Week): Stillbirths and Neonatal Mortality by Order of Birth and Type of Anesthetic*

Type of Anesthetic	First Born	Second-Fourth Birth	Fifth Birth and Over	First Born	Second-Fourth Birth	Fifth Birth and Over	First Born	Second-Fourth Birth	Fifth Birth and Over
	Stillbirths and Neonatal Deaths per 1,000 Live Births			Neonatal Deaths per 1,000 Live Births			Stillbirths per 1,000 Live Births		
Caudal.....	37.7	38.8	14.0	17.4	24.9	....	20.3	13.9	14.0
Spinal.....	50.2	96.8	52.6	22.3	10.8	52.6	27.9	86.0	....
General.....	66.2	43.4	134.6	13.2	21.7	19.2	53.0	21.7	115.4
None.....	294.0	93.1	141.3	128.2	46.7	65.2	166.7	51.4	76.1
	Number * of Live Births			Number * of Neonatal Deaths			Number * of Stillbirths		
Caudal.....	689	361	143	12	9	..	14	5	2
Spinal.....	179	93	19	4	1	1	5	8	..
General.....	161	138	52	2	3	1	8	3	6
None.....	78	214	184	10	10	12	13	11	14

* Excludes all infants unknown for order of birth.

6.4 per thousand full term births in the caudal and control groups, respectively, but this difference also is not statistically significant.

THE MEMPHIS STUDY

The Memphis Study is composed of 2,626 consecutive births of which 1,271 live and stillbirths were managed with continuous caudal analgesia, 324 were managed with spinal and continuous spinal analgesia, 375 cases were managed with general anesthesia and 577 cases with no form of anesthesia. In the latter group of cases the deliveries were either tumultuous and precipitate or they occurred at times when all available intern and residency supervision was utilized in the delivery of other patients. So far as possible some

(3,020.9 Gm.) for the group in which no anesthetic was used. When all babies weighing less than 3 pounds (1,306.8 Gm.) are excluded from the latter group, the average weight at birth was 6.83 pounds (3,098 Gm.). Since in many of the precipitate deliveries in the groups with no anesthesia the infants weighed less than 3 pounds with a poor chance of viability, no infants in this group weighing less than 3 pounds were considered in the comparison presented in chart 9.

Among all infants in the caudal group, stillbirths amounted to 18.4 per thousand live births. It will be noted that this rate is twice that of the Philadelphia study and is explained by the high percentage of Negro patients in this group who have shown a greatly increased stillbirth rate. Yet there were 56.3 stillbirths

per thousand live births in the general anesthesia group. This was more than twice the 24.8 stillbirths per thousand live births in the Philadelphia series delivered in the control group.

The stillbirth rate for deliveries under spinal anesthesia of 45.2 per thousand live births was also high. Possible reasons for this high rate are presented elsewhere in the paper. The stillbirth rate for deliveries under no anesthesia of 80.4 per thousand live births was alarming. It emphasizes the dangers of uncontrolled, tumultuous labor as a cause of intrauterine anoxia. Pressure trauma of rigid maternal musculature against the soft tissues of the infant (particularly the premature infant) is dangerous. The premature infant not only suffers from the anoxia of the tumultuous contractions of precipitate labor, but is not vigorous enough to withstand the rigidity of a mother's muscu-

TABLE 11.—*Memphis Study, 1946 (Negro and White): Distribution of Infants by Order of Birth and Type of Anesthetic*

Type of Anesthetic	Total *	First Born	Second-Fourth Birth	Fifth and Over
Percentage				
Caudal.....	100	57.8	30.3	12.0
Spinal.....	100	61.5	32.0	6.5
General.....	100	44.3	40.5	15.2
None.....	100	16.4	45.0	38.7
Number				
Caudal.....	1,193	689	361	143
Spinal.....	291	179	93	19
General.....	341	151	138	52
None.....	476	78	214	184

* Totals exclude all unknown for gravida.

TABLE 12.—*Memphis Study, 1946 (Negro and White): Percentage of Infants According to Order of Birth and Type of Anesthetic*

Type of Anesthetic	Percentage			Number of Infants		
	Total	First Birth	Second or Later Birth	Total of Known Order	First or Later Birth	Second or Later Birth
Total of these 4 groups.	100	46.8	53.2	2,430	1,137	1,293
Caudal.....	100	57.4	42.6	1,235	703	522
Spinal.....	100	59.5	40.5	309	184	125
General.....	100	43.7	56.3	364	159	205
None.....	100	17.1	82.9	532	91	441

lature of the birth canal and perineum when she, because of pain, is accentuating the traumas of birth through voluntary muscular straining with sometimes convulsive force (chart 10 and table 9). The high neonatal mortality of 63.6 per thousand live births in this group suggests irreparable trauma compared with the low neonatal mortalities of 18.4 and 16.9 in the caudal and general groups, respectively.

It should be pointed out that the general anesthesia group was comprised of mothers who came to the hospital late in labor and were so close to delivery that no time was available for the administration of a regional nerve block anesthetic. On the whole this group contained a larger number with uncomplicated labor and delivery than the other groups. Yet in the spinal anesthesia group the neonatal mortality was 29 per thousand live births and in the group with no anesthesia and with tumultuous labor the neonatal mortality was 34.9 per thousand live births even after all infants under 3 pounds in this latter group were excluded.

Because of the unexpected high combined stillbirth and neonatal mortality in the spinal anesthesia group of 74.2 per thousand live births, this group was exam-

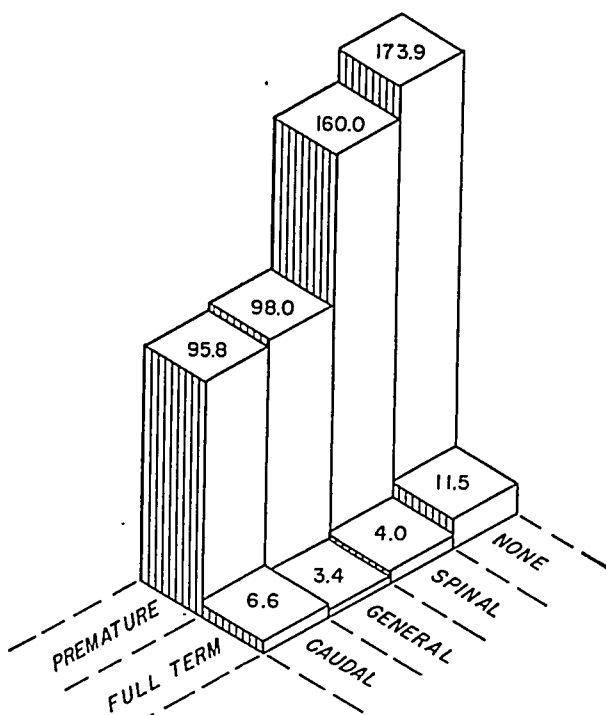


Chart 9.—Neonatal mortality per thousand live births among full term and premature infants, Memphis study, 1946 (Negro and white infants, under one week).

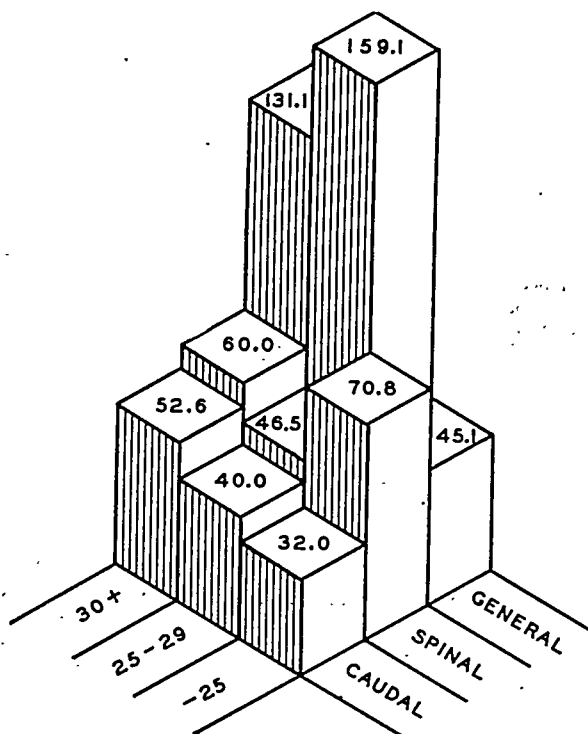


Chart 11.—Stillbirths and neonatal mortality (under 1 week) per thousand live births among Negro and white mothers of different ages, Memphis study, 1946.

ined more minutely. It is seen in table 8 that in the full term infants this combined stillbirth and neonatal

mortality of 47.7 per thousand live births compared unfavorably with the 15.0 in the caudal group. Also in the premature group the combined stillbirth and neonatal mortality of 220 per thousand live premature infants compared unfavorably with the 174 in the caudal group.

The combined neonatal and stillbirth rate in the group with no anesthesia was 25.2 for full term infants and 377 for premature infants weighing 3 pounds or more at birth. These high rates make us seriously question the safety of those methods which withhold pain relief during labor and delivery. An evaluation of those methods which exclude the use of pain-relieving drugs and anesthetics should include not only an analysis of maternal mortality and morbidity, but also an analysis of results relating to stillbirths and neonatal mortality and morbidity. To date no such study has been reported.

This paper has been concerned with an analysis of fatalities in the first week of life in the various anesthetic groups. Such an analysis is only an apical index of the extensive morbidity which forms the base of the pyramid that comprises such a large part of pediatric practice.

Chart 11 and table 10 show stillbirth and neonatal mortality in the caudal, spinal and general anesthesia groups among mothers of the three age groups: under 25 years, 25 to 29 years and 30 years and over. The lower stillbirth and neonatal mortality rates in the caudal group are consistent for all three ages of mothers. Table 10 emphasizes the high loss of infant life both as stillbirths and neonatal deaths in the noncaudal groups.

In this paper we have presented the stillbirth and neonatal mortality rates in the various anesthetic groups. We are not drawing any further conclusions at this time.

ABSTRACT OF DISCUSSION

DR. JAMES G. HUGHES, Memphis, Tenn: The authors' figures in regard to early spontaneous onset of respiration and the diminished need for special agents to induce respiration are significant. They check with the common observation that "caudal babies" are usually more alert and wide awake when delivered. This improvement in respiratory function in the first moments of life is of great importance in all newborn infants, but it has particular significance in premature ones, notorious for their respiratory difficulties and carrying the highest mortality rates of any pediatric group. It is well to remember that the salvage of the premature infant is the core of the problem of reducing infant mortality rates. At the University of Tennessee, we have been interested in obtaining evidence on the functioning of the cerebral cortex in newborn infants. The pediatric department has been engaged in a study of electroencephalography of the newborn infant. Many of the tracings have been obtained in the first minutes of life. It appears from tracings taken on the newborn infants whose mothers were delivered under continuous caudal analgesia that there is a more rhythmic pattern to the tracings, and more superimposed fast activity, which may indicate a more alert cerebral cortex. The difficulty in interpreting these tracings lies in the fact that normal patterns have not been well established for the first few hours of life. We are especially interested in what differences may be detected in regard to cortical activity of children born of mothers given various types of sedation, general anesthesia, continuous caudal analgesia or no drugs at all. At present we

have no definite conclusions to report. The authors do well to give prominence to the hazards to the fetus inherent in the procedure of caudal analgesia. The drop in maternal blood pressure, which may occur to levels dangerously low for fetal safety, is of special importance. The increased incidence of occipitoposterior presentations and operative deliveries from below tend to increase fetal mortality. Therefore, good judgment and careful technic, especially in the use of forceps, must accompany such forms of pain relief, if good results are to be obtained. On the basis alone of early, spontaneous onset of respiration with decreased need for stimulant procedures and drugs, caudal analgesia is a real contribution to the reduction of the newborn death rate. The figures given by the authors showing lower rates of stillbirths and neonatal deaths are probably due, in large part, to this improvement in respiratory function. To reduce to an even lower level the stillbirth and neonatal death rates will require a medical profession more and more oriented toward affording every possible safeguard to the unborn child.

DR. JOSEPH B. SNEFFERY, Washington, D. C.: At Providence Hospital in Washington, D. C., we had over three thousand deliveries last year, and among those there were 214 premature babies. This is a small number in comparison with Dr. Hingson's thousands of deliveries, but it tells the same story, and every little bit adds up to further the cause of giving caudal analgesia especially in these premature babies. Statistical data are subject to much criticism, I suppose, but at least there are some constant factors in these. They are uncorrected, for one thing, and there are the constant factors. All these premature babies were cared for by three pediatricians in about equal proportion, and all the deliveries, or the vast majority of them at least, were normal deliveries. The only variable factor was in the group that received caudal analgesia and the group that received general anesthesia. In these two hundred and fourteen deliveries of premature babies, 89 per cent of the babies delivered with the mothers under caudal analgesia lived and only 72 per cent of these delivered with the mothers under general anesthesia lived. In the stillborn group, 4 per cent of the babies delivered with the mothers under caudal analgesia were stillborn, and 10 per cent were stillborn when general anesthesia was used; and of the babies who were born alive but died later, 7 per cent were delivered with the mothers under caudal and 18 per cent under general anesthesia. From all of these groups, it is seen that the figures definitely favor caudal analgesia. The theory that caudal anesthesia relaxes the pelvic floor, has no narcotizing effect on the baby, has been talked about before. These figures actually back it up. It certainly is a real indication, I believe, in premature babies. It gives them their one good chance.

DR. RUSSELL WILBUR ALLES, Detroit: Here we have been presented for the first time with statistical proof, based on an acceptably large number of cases, that labors conducted under continuous caudal analgesia offer the best prospects for the welfare of the baby. At the same time, the time-honored conviction that babies fare better when the mother has no pain relief during labor has been dealt a fatal blow, for the poorest results are here shown to occur in babies whose mothers had no method of pain relief applied during labor. In fairness to the other methods of pain relief, it should be noted that while the results were uniformly better with continuous caudal analgesia, the strikingly large infant mortality when no analgesia or anesthesia was used was responsible for a major part of the deterioration in this group. A reduction of almost one half in neonatal mortality and almost two thirds in stillbirth mortality must always be impressive. In prematurity, which contributes so generously to our infant mortality statistics, our aim as obstetricians is to conduct labor with a minimum of risk to the baby, and from the results here reported, it would seem that continuous caudal analgesia more nearly approaches that goal than any other method heretofore used. The authors have stated the objections to continuous caudal analgesia, and these objections are neither minor nor invalid. They serve to stress

the fact that continuous caudal analgesia is not a method to be carelessly used by those who are not well acquainted with its technic, use and risks. The attendant complications are such that they can be most safely overcome only by those who are thoroughly conversant with obstetric art and practice. The care and time consumed for its safe application will always be a major obstacle. The importance of this study is enhanced by the fact that the authors and their associates were in direct charge of all the cases in the study and therefore we can assume that the same standards of care prevailed in all cases.

DR. GEORGE J. ANDROS, Chicago: I am asked frequently whether I can name any particular case in which general anesthesia has been the direct cause of fetal mortality. It often becomes extremely difficult to pick out such cases, but in what we have heard this afternoon we appear to have the answer. At the Chicago Lying-in Hospital in the past five and a half months we have used an allied technic of pain relief, saddle block spinal anesthesia, in over 1,000 cases. In analyzing the first 719 cases, we noted that only 6 of these women went home without a live baby. In 3 instances, the fetus was known to be dead before the saddle block was administered, and this was proved by the condition of the baby after delivery. Here the regional method was used for the benefit of the mother. The remaining 3 infants breathed spontaneously immediately after birth and died in the neonatal period. Causes of death revealed by autopsy were resorption atelectasis and jaundice in a 30 week premature infant, a major congenital abnormality and pneumonia. These figures give us an uncorrected fetal mortality rate of 0.85 per cent, and a corrected rate of 0.42 per cent. A somewhat comparable control series at the Chicago Lying-in Hospital shows less than 2 per cent fetal mortality. Probably Dr. Hingson would say that a sudden fall of blood pressure was a factor in the high fetal mortality in his group in which spinal anesthesia was used, which I know was not saddle block. Ninety-four per cent of our levels of anesthesia were at the ninth or tenth thoracic segment, and another 3 per cent at the eighth. There is not much fall in blood pressure with these levels. Five patients had levels to thoracic 5. Eighty-six per cent of our patients had a fall in systolic blood pressure of less than 30 mm. of mercury; 72 per cent had less than a 20 mm. drop. Seventy per cent of these patients needed no treatment, and the rest responded readily to oxygen and/or vasopressor drugs. In only 11 of our 719 cases was there a transient fetal heart rate drop to below 100 per minute, in association with significant fall in blood pressure.

DR. HAROLD W. ADAMS, Somersworth, N. H.: An evaluation of any method of controlling the pain of childbirth must carefully consider the health and vitality of the baby along with the health and comfort of the laboring mother. At Frisbie Memorial Hospital in Rochester, N. H., 736 infants have been delivered under continuous caudal management since Jan. 1, 1944, as compared with the 1,372 births under other forms of management over the same period of time. From this total of 2,108 births, we believe that the percentage of live births with the mothers under caudal analgesia compares favorably with the percentage of live births under other forms of management combined. Of the group of 736 caudal births, there have been 11 stillbirths, or a caudal stillbirth percentage of 1.49. In this group, there were also 8 neonatal deaths, giving a combined stillbirth-neonatal mortality of 2.6 per cent. Incidentally, of the 11 stillbirths reported, there were 6 macerated babies whose deaths were presumed for sometime before the onset of labor, 3 stillbirths from difficult labors with malpositions in midforceps deliveries, 1 spina bifida and 1 anencephalus. All eight neonatal deaths took place within the first four postnatal days, 1 infant weighing 27 ounces (765.4 Gm.) and living 26 hours, 5 others being premature and weighing less than 4 pounds (1,814.4 Gm.), and 2 deaths were not attributed to birth management. Of the control group of 1,372 births, there were 31 stillbirths, or a stillbirth percentage of 2.26, as compared to 1.49 per cent of the caudal group. I regret that an incomplete record of neonatal deaths in the control group will not permit me to give an accurate comparison of deaths of the newborn. However, I do

know that our combined stillbirth-neonatal percentage of 2.6 is well below the combined national figures of 6.8 per cent for all races and 4.8 per cent for the white race. In our series of caudal births, we have been greatly impressed with the condition of the newborn. The average infant breathes almost immediately, and rarely does one require resuscitation or special agents to stimulate respiration. We have not found this to be true of babies born to heavily sedated mothers or mothers under general anesthesia.

DR. ROBERT A. HINGSON, Memphis, Tenn.: Certainly, the electroencephalographic studies begun by Dr. Hughes in Memphis on the immediate postnatal reactions of the infants delivered with the various anesthetic agents should be continued, because in such basic experimental pediatrics we can get a clue to the altered physiology in the newborn infant which may seriously influence the developing baby in the first few days of life. We welcome the active consultation of the pediatrician. Dr. Andros has presented an excellent initial report concerning the use of saddle block spinal anesthesia in the Chicago Lying-in Hospital. The principles of caudal and saddle block spinal anesthesia are the same from the standpoint of the baby, the obstetrician and the pediatrician. Only the anesthesiologist and the mother are confronted with different experiences and different principles of technic with continuous caudal and saddle block spinal anesthesia. We favor the advancement of all forms of regional nerve block because we have clearly demonstrated that all forms of regional nerve block produce a reduction in infant mortality, when compared with control groups managed with systemic narcosis and general anesthesia and no anesthesia. Therefore, we are pleased to join those who have done pioneer work in different technics. We encourage the skilful use of conduction, nerve block technics in obstetrics. Such use will produce the salvage of the baby that has been demonstrated here. Dr. Alles in Detroit, Dr. Sheffery in Washington, Dr. Andros in Chicago and Dr. Adams in New Hampshire have proved that the advantages of continuous caudal analgesia in infant conservation are not geographic. The first hundred years of history of the American Medical Association have produced a startling reduction in maternal mortality. One hundred years ago, we lost more than 60 mothers per thousand live births. Today, we lose 2.1 mothers per thousand live births. It is my plea that the second hundred years of achievement of the American Medical Association be devoted to the salvage of the baby, since, as it now stands, an over-all loss of 6.8 per cent of our infants is entirely too high. We have demonstrated to you the bridge that will take us across the chasm of infant deaths to a reduction of infant mortality and to a healthier group of young Americans.

A Great Moral Struggle.—When Elizabeth Blackwell conceived the idea of becoming a doctor of medicine, there was no means in America or Great Britain by which a woman could receive a medical education. Single-handedly, however, she undertook to remove this barrier to the advancement of women. The thought of studying medicine first came to her attention through the illness of a friend, but before long the idea took on in her mind a moral aspect. "The idea of winning a doctor's degree," she writes, "gradually assumed the aspect of a great moral struggle, and the moral fight possessed immense attraction for me." It is this sense of being a standard bearer of a righteous cause, of consecrating oneself to the service of humanity, which characterizes the earlier generations of women doctors. In 1845 Elizabeth Blackwell decided to study medicine. After being rebuffed in Philadelphia and New York, she finally gained admission to Geneva Medical College, from which she received her medical degree in 1849. In 1869 she returned to England and settled in London. Dr. Blackwell died in 1910. Her autobiography, "Pioneer Work in Opening the Medical Profession to Women—Autobiographical Sketches" (1895), is an outstanding human document.—Rosen, George, and Caspari-Rosen, Beate: 400 Years of a Doctor's Life. New York, Schuman's, 1947.

CEREBRAL GRANULOMA DUE TO SCHISTOSOMIASIS

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Cerebral schistosomiasis is rare and few operative cases have been reported in the literature. Bayoumi¹ stated that Tsunoda and Schimamura² were the first to find *Schistosoma japonicum* eggs in the brain. Manson³ noted the occasional occurrence of eggs of *Schistosoma haematobium* in the brain and spinal cord. Faust and Meleney⁴ stated that Yamagiwa in 1890 mentioned the occurrence of jacksonian epilepsy in a patient with schistosomiasis japonica and that Houghton in 1910 also described a case in which he suspected that symptoms referable to the brain were due to the deposit of *S. japonicum* eggs. They indicated that such cases are rare. Spiridion⁵ in 1936 described an outbreak of schistosomiasis japonica in China. Only three patients showed neurologic involvement. Egan⁶ in 1936 reported 2 neurologic cases of schistosomiasis japonica in a series of 12 English sailors who went swimming in the Yangtze river near Chinkiang, China. Edgar⁷ in the same year reported 1 case of epilepsy due to the infection of *S. japonicum*. Hoff and Shaby⁸ in 1939 reported 1 case of myelitis with mental confusion due to *S. haematobium* and referred to 3 cases of mental confusion associated with bilharziasis. Vitug and Cruz⁹ in 1941 reported 2 cases of schistosomiasis japonica involving the brain in the Philippines. They stated that schistosomiasis japonica is endemic in certain regions in the Philippines; namely, Leyte, Samar, Sorsogon, Surigao and Mindoro. All patients coming from these places to the Philippine General Hospital, whether they manifest symptoms of the disease or not, almost invariably show eggs of *S. japonicum* in the

stools, but cerebral schistosomiasis in the Philippines is a rare phenomenon. In the Philippine medical literature there are only two reports before Vitug's referring to schistosomiasis of the brain. Nieva¹⁰ reported a patient with probable diagnosis of schistosomiasis of the brain, and Africa¹¹ made passing mention of finding post mortem the eggs in the brain as well as in the other viscera in a fatal case of schistosomiasis.

Carroll¹² has reviewed the literature of schistosomiasis of the brain up to January 1946. He found 8 cases and added 4 new ones.^{12a} Of the 8 previously reported, 2 were proved to be schistosomiasis after an exploratory craniotomy for tumor of the brain.¹³ Autopsy was done in 1 other case.⁹ The diagnosis in the remainder of these cases and in those of Carroll was based on a history of exposure to *Schistosoma*, observation of *Schistosoma* eggs in the feces and the clinical picture. All of Carroll's cases occurred in American troops on Leyte, apparently in good health without exposure to this illness previous to the American invasion of the island late in 1944. In all except 1 case, the neurologic manifestations took place during the acute stage of the disease.

Tillman¹⁴ has recently (January 1947) reported 6 new cases of schistosomiasis japonica with cerebral manifestations among the American troops on the Island of Leyte.^{12a} There were 6 cases among 181 patients with schistosomiasis admitted to his hospital from January 15 to July 15, 1945. An additional patient observed at another hospital on Leyte was included in his report. All 6 patients were treated both with stibophen ("fuadin") and potassium antimony tartrate before they were sent back to the United States. Clinical symptoms were consistently improved after the treatment, although the parasites were not completely eradicated during the short period of observation. Cerebral schistosomiasis may sometimes appear clinically several months or even several years after the primary invasion by the cercariae. Consequently, one would expect to see a certain number of cases of cerebral

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Lieut. Col. Joseph M. Cameron, Medical Corps, United States Army, gave us permission to present the 2 cases which he observed and treated by craniotomies. Professor Ernest Carroll Faust, acting head of the Department of Tropical Medicine, Tulane University, provided in a personal communication comments regarding the pathogenesis, diagnosis and treatment of schistosomiasis. Dr. George M. Saunders, assistant professor of preventive medicine, University of St. Louis, permitted us to include his report. J. Palmer, Medical Corps, United States Army, made the pathologic report in case 2, and Col. Raymond O. Dart, Medical Corps, United States Army, Director of Army Institute of Pathology and Army Museum, furnished the photomicrographs. Mr. Lew Sunny, of Walter Reed General Hospital, photographer for the laboratory, made the photographs for case 1. Col. Raymond O. Dart and Col. J. E. Ash, Medical Corps, United States Army, of the Army Institute of Pathology, Washington, D. C., supplied the captions for figures 5, 6 and 7.

1. Bayoumi, M. L.: Bilharzial Myelitis, *J. Egyptian M. A.* 22: 457-461, 1939.

2. Tsunoda, T., and Shimamura, S.: Pathology of Katayama Disease: Supplementary Report on the Cause of Jacksonian Epilepsy and Emboli of the Cerebral Artery, *Kyoto Igakkwai Zasshi*, 1905, vol. 2, no. 3; cited by Bayoumi¹; cited by Speigel.²⁰

3. Manson-Bahr, P.: *Manson's Tropical Diseases*, ed. 11, Baltimore, Williams & Wilkins Company, 1940.

4. Faust, E. C., and Meleney, H. E.: *Studies on Schistosomiasis Japonica*, Monographic Series, no. 3, Baltimore, American Journal of Hygiene, 1924.

5. Spiridion, J. T.: Schistosomiasis Japonica: An Account of an Outbreak in China, *J. Trop. Med.* 39: 161-164, 1936.

6. Egan, C. H.: An Outbreak of Schistosomiasis Japonica, *J. Roy. Nav. Serv.* 22: 6-18, 1936.

7. Edgar, W. H.: Report on Case of Epilepsy Due to Infection by *Schistosoma japonicum*, *J. Roy. Nav. Serv.* 22: 150-153, 1936.

8. Hoff, H., and Shaby, J. A.: Nervous and Mental Manifestations and their Treatment in Schistosomiasis, *Tr. Roy. Soc. Trop. Med. & Hyg.* 33: 107-111, 1939.

9. Vitug, W.; Cruz, J. R., and Bautista, L. D.: Schistosomiasis Involving the Brain: Two Cases, *J. Philippine M. A.* 21: 291-298, 1941.

10. Nieva, D. E.: Epileptiform Convulsions Probably Due to Schistosomiasis, *Bull. San Juan de Dios Hosp.*, 1935, vol. 9, no. 7.

11. Africa, C. M., and Santa Cruz, J. Z.: Eggs of *Schistosoma japonicum* in the Human Heart, in *Volumen Jubilare pro Sadao Yoshida*, Osaka, Japan, 1939, vol. 2, pp. 113-117.

12. Carroll, D. G.: Cerebral Involvement in Schistosomiasis Japonica, *Bull. Johns Hopkins Hosp.* 78: 219-234, 1946.

12a. The number of cases reported by Thomas and Gage,²⁰ Carroll,¹² Tillman,¹⁴ and Billings, Winkenwerder and Hunnien (table 1) are corrected in this paper to avoid duplication on the basis of a personal communication from Billings who had access to all these manuscripts when he wrote on schistosomiasis japonica for the Surgeon General's History of the Medical Department in World War II. The following data is so far as can possibly be ascertained correct. The patients mentioned by Thomas and Gage, *Bull. U. S. Army IV*, No. 2, 1945 were three in number. Two of these cases were used by either Winkenwerder and myself or Tillman. They could therefore be deleted in a total count for convenience sake. The third was never proven to be a case of cerebral schistosomiasis so far as I know. The patient died and examination of the brain was thorough and no ova were demonstrated microscopically. Winkenwerder and I mentioned 7 cases of *S. japonica* involving the central nervous system. One of these was previously described by Thomas and Gage and another was used by Carroll. One was used only by us. The other 4 patients do not seem definitely to be in the group of proven or even symptomatic or clinical cases of cerebral schistosomiasis. Two complained of paresthesias, one had a peroneal nerve palsy, and the 4th had subjective transient impairment of the vision of the left temporal field, but no objective findings could be found, and when we saw him he had no central nervous system signs or symptoms. Carroll described 4 new cases, and one which was described by Winkenwerder and myself. Tillman described 6 new cases and one which had been previously described by Thomas and Gage. Thus in tabulating the separate cases one finds:

Thomas and Gage.....	2
Billings and Winkenwerder.....	2
Carroll.....	4
Tillman.....	6

Total..... 14 "

13. Greenfield, J. G., and Pritchard, B.: Cerebral Infection with *Schistosomiasis japonica*, *Brain* 60: 361-372, 1937; cited by Carroll¹²; cited by Speigel.²⁰

14. Tillman, A. J. B.: Schistosomiasis Japonica with Cerebral Manifestations: Report of Seven Cases, *Arch. Int. Med.* 79: 36-61 (Jan.) 1947.

schistosomiasis among those who returned to the United States from endemic regions of schistosomiasis in the Pacific combat area.

Schistosomiasis of the brain should be considered in obscure diagnostic problems, including epileptiform convulsions and other neurologic diseases suggesting encephalitis or multiple sclerosis, especially if the patient is a soldier who has returned to the United States from an area in which schistosomiasis is endemic.

Experiences in World War II suggest that the disease is far more common than previously suspected and that a number of these cases may appear in the United States. We have been able to find references to 23 cases of cerebral schistosomiasis occurring during the fifty-six year period between 1890 and January 1946. During the fifteen month period following January 1946 we have been able to find published references to 16 additional cases. There is ample reason to believe that many other cases have gone unrecognized or have not been reported. All the reported cases are summarized in table 1.

It can be seen from table 1 that the diagnosis in 28 of these cases was presumptive, based on the association of neurologic manifestations with classic intestinal schistosomiasis. Prior to this report there were 10 cases in which the diagnosis was based on the discovery of *Schistosoma* eggs in brain tissue; 5 from biopsy and 5 from autopsy. Bayoumi¹ stated that *S. haematobium* is more apt to affect the spinal cord than the brain, being present in 3 cases out of 5 of bilharzial myelitis. Infection of the central nervous system with *Schistosoma mansoni* was reported by Muller and Stender.¹⁵ We found no reference in the literature to the presence of *S. mansoni* eggs in the brain, nor did we find any report of *S. japonicum* eggs occurring in the spinal cord. Among the total of 38 reported cases of cerebral schistosomiasis only 3 were due to *S. haematobium*, while the remaining 35 cases were due to *S. japonicum*.

In the Army General Hospitals, we have recently encountered 2 instances of cerebral granuloma caused by *S. japonicum* which we feel are worth reporting.

REPORT OF CASES

CASE 1.—The patient, a white man aged 26, with fourteen months' South Pacific duty, including service on Leyte, was well until the beginning of his present illness in August 1945. His symptoms at that time were low grade, persistent fever and weakness of the right arm and right leg. From the onset of these symptoms until August 13 the weakness of his right leg became progressively greater, so that on admission he was unable to walk.

On August 13 he had a jacksonian seizure involving the right side of the body without loss of consciousness. Examination at that time showed a right-sided hemiparesis with diminished sensation over the entire right side of the body, with generalized hyperreflexia and extensor plantar response on the right. There was slight weakness of the right facial nerve. At the time of the original episode, there was dysphagia and a blurring of vision together with the symptoms listed. Spinal puncture at that time showed 15 lymphocytes and slight increase in globulin.

On September 7 he was evacuated to McCloskey General Hospital, where some improvement was noted in the strength of his right side, but the patient was having fairly severe generalized headaches. Examination showed paresis of the right arm and leg, with more involvement of the leg. Sensory examination revealed hyperesthesia, grade II, involving the

right arm and leg. There was mild hyperreflexia without any abnormal reflexes. Laboratory examinations at McCloskey showed that roentgenograms of the chest and skull were normal. Results of urinalysis, serologic tests, blood cell count and coccidioidin cutaneous tests were not significant. Spinal puncture on September 19 revealed no abnormality except for 62 white blood cells, but on a later date the number of lymphocytes had been reduced to 9. The course, while at McCloskey, was one of improvement, both symptomatically and in laboratory examinations. Before he left McCloskey the patient's weakness and dysphagia had improved. Psychometric examination showed only a mild decrease of mental function.

The patient was closely followed from the time of his admission at McCloskey General Hospital, and the clinical picture presented on his arrival at that hospital suggested that the probable basis for the patient's illness was either an expanding lesion or a vascular accident.

Following a complete work-up with a more careful and detailed analysis of his clinical records, however, it was felt that the most likely pathologic process was in the nature of

TABLE 1.—Summary of Reported Cases of Cerebral Schistosomiasis with Reference to Diagnosis

Author	Year of Report	Presumptive Diagnosis	Pathologic Diagnosis
Yamaguchi ⁴	1890	..	1 autopsy
Teunoda ²	1906	..	1 autopsy
Houghton, cited by Faust and McJeney ¹	1910	1	.....
Chu, C. F.; Chinese M. J. 52: 651, 1931, cited by Faust, E. C.; Wright, W. H.; McMullen, D. B., and Hunter, G. W.; Am. J. Trop. Med. 20: 87, 1946.....	1931	2	.....
Nieva ¹⁰	1935	1	.....
Shimldzu ²⁴	1935	..	1 biopsy
Spiridion ⁵	1936	3	.....
Egan ⁶	1936	2	.....
Edgar ⁷	1936	1	.....
Greenfield ¹³	1937	..	2 biopsies
Hoff and Shaby ⁸	1939	3*	.....
Africa ¹¹	1939	..	1 autopsy
Vitug ⁹	1941	1	1 autopsy
Thomas and Gage ²⁰	1945	2	.....
Carroll ¹²	1946	4†	.....
McNamara, cited by Faust ²⁵	1946	..	1 autopsy
Billings, F. T.; Winkenwerder, W. L., and Hunnien, A. V.; Bull. Johns Hopkins Hosp. 78: 21, 1946.....	1946	2†	.....
Tillman ¹⁴	1947	6†	.....
Speigel ²⁰	1947	..	1 biopsy
Watson, Murphey and Little ²⁷	1947	..	1 biopsy
Total.....		28	10
Grand total.....			38

* Caused by *Schistosoma haematobium*.

† Duplications found by Billings are omitted.

a chronic inflammatory condition of a granulomatous type. This would more readily explain the persistent pleocytosis with the accompanying low grade fever and leukocytosis noted during the early phase of his illness.

With this in mind, the various specific and nonspecific granulomatous lesions were considered and the diagnostic approach was accordingly altered. Special laboratory procedures on the spinal fluid and cutaneous tests together with roentgenograms of the chest ruled out fairly well the possibility of a syphilitic or tuberculous condition, and it was felt that a most likely etiologic factor responsible for this chronic localized encephalitic process was in the nature of a fungus, probably coccidioidomycosis, or a parasitic infection such as toxoplasmosis or histoplasmosis.

A pneumoencephalogram was considered but, because the patient continued to improve considerably in the several months of his hospitalization at McCloskey, it was felt that he should be treated more conservatively, and he was transferred to Brooke General Hospital for further observation and treatment, with the diagnosis of chronic focalizing encephalitis, cause and type undetermined. The patient was seen in April 1946, and it was noted that a considerable improvement of his hemiparesis and hemihyperesthesia had been made, but there was a complete motor aphasia which had developed in the course of six weeks'

15. Muller, H. R., and Stender, A.: Bilharziose des Rückenmarkes unter dem Bilde einer Myelitis dorso-lumbalis transversa completa, Arch. f. Schiffs- u. Tropen-Hyg. 34: 527-538, 1930; cited by Speigel.²⁰

time, with the onset in February 1946. There was no evidence of any sensory aphasia and the patient could write and copy well, although there was complete inability to express himself verbally. Laboratory studies at this time showed serologic reactions to be negative. The urine was entirely normal. The white blood cell count was 12,000, with 12 per cent eosinophils. The spinal fluid was essentially normal except for increased lymphocytes up to 14. Necator americanus, on one occasion, was found in the stool, and it was felt that this explained his eosinophilia. However, after treatment with hexylresorcinol, the eosinophilia persisted.

The fact that the initial hemiplegia had cleared so well, to be followed subsequently in a period of six months by progressive aphasia with a persistent pleocytosis, indicated renewed activity with good localization in the left frontoparietal region. This further substantiated the fact that the pathologic process was probably of a chronic inflammatory nature of a granulomatous type. The patient was followed closely, and in April 1946 the neurologic examination remained essentially the same except for examination of the fundus, which showed a venous engorgement and haziness of the disks bilaterally. This fact, together with the excellent localization, indicated clinically that, regardless of the etiology, it must be considered as an expanding lesion, and for this reason it was deemed advisable to transfer the patient to the Neurosurgical Service for an air study. Encephalographic studies of the brain revealed a fair amount of air in the right lateral and third ventricles. Only a minimal amount of air was seen within the posterior horn of the left lateral ventricle. The right lateral ventricle was moderately dilated and appeared to be displaced to the right. The anteroposterior view showed no evidence of air in the left lateral ventricle. The roentgen observations were consistent with a tumor in the temporoparietal region of the left hemisphere. A craniotomy was performed on April 12 by means of a left frontoparietal flap. When the dura was exposed, it was found to be under only moderate tension and adherent at only one point in the frontal region to the underlying cortex. The gyri were decidedly flattened and the sulci obliterated.



Fig. 1.—Many sections exhibited ova, pink-staining bodies characteristic of *S. japonicum* eggs, surrounded by an intense inflammatory cell reaction, necrosis and fibrosis. X 100. (Photomicrograph by Mr. L. Sunny, Walter Reed General Hospital.)

The dura was adherent to the posterior portion of the third middle frontal convolution. After the area was exposed the inferior frontal convolution, though not adherent, bore the same gross appearance. It was harder than its neighbors, yellow in color, less vascular on the surface and was studded with nodules ranging from pinpoint size to 2 mm. in diameter. These

were hemispherical elevations resembling pimples, such as might be found on the skin. Biopsies were taken to include some of these, as far away as possible from the motor speech area. Inasmuch as frozen section biopsy was indeterminate as to the type of tissue causing the tumor mass, the bone flap was removed and the scalp closed as a large decompression. Immediately after the operation the patient's progress was not significant, but



Fig. 2.—Often the eggs appeared together in clumps. X 100. (Photomicrograph by Mr. L. Sunny, Walter Reed General Hospital.)

on the fourth postoperative day the movements of the right hand and his speech were improved. However, the patient had two jacksonian convulsions. On April 18 he was started on stibophen, 1.5 cc. intramuscularly, followed the next day by 3.5 cc. and thereafter by twelve daily doses of 5 cc. each. On May 6 the patient had another jacksonian seizure, following which there was paralysis of the right arm, lasting approximately eight hours. On May 20 a similar course of stibophen was started.

The patient continued to improve very slowly. Throughout his hospital stay exhaustive search for *S. japonicum* failed to show any evidence of the parasites or eggs in any specimens except that of the biopsy of the brain. A follow-up encephalogram was performed July 3, and it was noted that there was definite improvement as compared with the preoperative picture, taken in April. There was only slight dilatation of the posterior portion of the body of the left lateral ventricle with slight shifting of the ventricular system to the left. The patient received three courses of stibophen in all and underwent an intensive regimen of physical therapy for the hemiparesis, which improved considerably. He also received speech training, and this has likewise shown a slow but gradually progressive improvement. The last residuum on May 20, 1947 was a minimal aphasia; however, the patient was able to carry on a slow conversation.

Pathologic Changes Noted at Biopsy.—Gross Pathology: Numerous fragments of tissue were submitted. One consisted of a small grayish white, slightly indurated piece of tissue measuring about 1 by 8 by 6 mm. The remainder were numerous small grayish white slightly firm fragments of tissue measuring 1.5 cm. in total breadth. A small piece of dura measuring 2 by 1.3 cm. was also submitted.

Microscopic Examination (figs. 1, 2 and 3): On microscopic examination, the most striking feature observed was the presence of numerous oval-shaped, pink-staining bodies occurring in almost all the fragments. These were characterized by round ends. They had a peripheral shell-like capsule, from many of which there protruded numerous pink-staining small

necrotic cells. The inner aspect of these pink-staining bodies was occupied by numerous blue-staining granules varying in size and shape. These oval-shaped, pink-staining bodies had the characteristic appearance of *Schistosoma* eggs. They were surrounded by an intense inflammatory reaction consisting of many eosinophils and some neutrophils. In the vicinity immediately surrounding these areas there was, in addition to the inflammatory reaction, considerable necrosis. There were numerous other areas in which these eggs may or may not have been present, characterized by extensive necrosis surrounded by dense fibrosis. Occasional giant cells were seen in these areas. The fibrotic zone was usually surrounded by a moderate infiltration of round cells and polymorphonuclear cells, among which were seen a fair number of eosinophils. There were many vessels showing decided perivascular cuffing of round cells associated with a few polymorphonuclear cells. The brain substance exhibited pronounced hemorrhage, degeneration and gliosis.

The oval-shaped bodies found in the brain lesion were characteristic of the eggs of *S. japonicum*.

CASE 2.—The patient was a white technician fifth grade, aged 22, with seventeen months' service on Leyte and Okinawa, who was admitted to the Percy Jones General Hospital on Dec. 22, 1946 with the chief complaints of two attacks of unconsciousness preceded by left-sided twitching and also several episodes of twitching of the left leg or left arm not accompanied by unconsciousness. The present illness started on November 6 as a sudden onset of numbness in his left knee, traveling to his left leg, while at the same time the patient experienced twitching sensation of the left extremities. In the first attack he lost consciousness; since then he had several attacks of similar nature but syncope supervened in only one. The later attacks then occurred on the right side, and his symptoms were then limited entirely to this side of the body. The patient stated that he had no aura of the attacks and that the first he was aware of them was a twitching of the extremity. On Feb. 13, 1947 the patient had a seizure which at the time when he was first seen manifested itself in rather rapid, coarse motions of the right leg, consisting of flexion and

and it was noted that while he was exerting force the contractions of the right leg became less rhythmic and less rapid. The patient did not at any time lose consciousness; he was alert and responded well to questioning. His extraocular movements were entirely normal. The pupils were equal and were not dilated. The entire seizure lasted for approximately three minutes.



Fig. 4.—Notice the small nodules on the gyri.

Past history and family history were of no importance except for the fact that he had several attacks of headaches which were intense. There was no history of serious injuries. The patient could not recall having had any symptoms and signs relative to an acute phase of schistosomiasis before the present illness. He was well adjusted socially and had no emotional disturbances or personality maladjustment.

On examination between seizures, it was noted that there was impaired control of the right arm and leg, which the patient stated had been present since the last attack, on February 13. There was a questionable Babinski reflex on the right side; however, true fanning was obtained only twice, but at no time was there actual plantar flexion, as was elicited on the left. There was a definite ankle clonus which was transient. There was definite adiadochokinesis on the right and when the patient's eyes were closed there was decided swaying to the right and down. However, the results of the finger to nose test were within normal limits. The patient had no difficulty in identifying objects with the right hand. The heel to knee test elicited a positive result on the right. The Romberg sign was positive, and the patient fell to the right. He also walked with a broad base, this being effected by adduction of the right leg on walking.

On fundusoscopic examination there was possibly minimal increased tortuosity of the vessels, and if there was papilledema it was minimal.

The patient had had two pneumoencephalograms, and both showed normal arachnoid space filling, but on neither was there filling of the ventricles. The lesion was diagnosed by ventriculogram as a space-occupying mass in the left parietal region, with distortion and displacement of the lateral ventricle to the right side, exact etiology undetermined. Among the possibilities were meningioma, glioma, hemangioma and schistosomiasis. Preoperatively the surgeon made a presumptive diagnosis of cerebral schistosomiasis, basing it on the clinical picture in addition to seventeen months' overseas duty in the South Pacific and an eosinophilia of 6 to 8 per cent, as well as on the general clinical resemblance to case 1.



Fig. 3.—Eggs, inflammatory cell reaction and necrosis were observed on the meningeal surfaces. $\times 100$. (Photomicrograph by Mr. L. Sunny, Walter Reed General Hospital.)

extension, abduction and adduction and flexion and extension of the foot. This soon diminished to a contraction limited almost entirely to the adductors which was not rhythmic or rapid. The clonus of the right foot was more pronounced than at the previous examination. There was definitely some spasm of the leg and to a lesser degree of the right arm. After this the patient was asked to squeeze the hand of the examiner,

Laboratory Data.—Roentgenograms of chest and skull were normal. Parasites were not found in stool. The urine was normal. There were 5,060,000 red blood cells and 5,550 white blood cells, with 56 per cent neutrophils, 36 per cent lymphocytes, 1 per cent monocytes, 6 per cent eosinophils and 1 per cent basophils. The hemoglobin was 29 per cent. Total protein in the cerebrospinal fluid was 26 to 13 γ . An examination of the ventricular fluid was made on Feb. 18, 1947. The fluid was cloudy. There were 8,300 red blood cells and 30 white blood cells, with 7 polymorphonuclear cells and 2 lymphocytes. There was no globulin.

On February 25 craniotomy was performed by means of a frontoparietal flap on the left side. A flap incision was made in the dura, which was reflected medial. When the dura was reflected, the posterior portion was found adherent to the cortex, and after resection many small, yellowish white masses were discovered, measuring approximately 2.5 mm. in diameter (fig. 4). The diagnosis of the lesion was schistosomiasis and was confirmed by frozen section. The mass was removed. Hemostasis was then carried out. There was bulging of the brain substance. The dura was not closed. The bone flap was removed.

The patient was stuporous after the operation and exhibited aphasia. Spinal tap was done in March with an initial pressure of 160 mm., which was reduced to 115 mm. Another spinal tap on March 4 revealed an initial pressure of 260 mm., which was reduced to 130 mm. The patient improved steadily. By March 23 the hemiparesis had so diminished that only



Fig. 5.—An old granuloma of the brain containing ova of *Schistosoma*, the majority of which are necrotic; the dark ones are calcified, but cell structure is still evident in several. Active inflammatory reaction has been replaced by dense hyalinized connective tissue.

minimal weakness remained and the aphasia had diminished so that the patient could carry on reasonably good conversation. On March 19 he was placed on a course of stibophen, administered in doses of 1.5 cc. intramuscularly for two consecutive days with omission on the third, to be continued according to the routine of medical treatment.

Examination on May 20 revealed no neurologic deficit or aphasia.

Pathologic Report.—The specimen was a segment of cerebral cortex (craniotomy).

Gross Examination: Material submitted consisted of an excised segment of cerebral cortex, with arachnoid, measuring 2.5 cm. in diameter and 0.5 to 0.8 cm. in thickness.



Fig. 6.—Higher power view of the group of ova shown in figure 5. The ova are deteriorated—one partially calcified. Foreign body giant cells and a few epithelioid cells and lymphocytes are evident.

Microscopic Examination (figs. 5, 6 and 7): Sections revealed in the superficial portion of the excised cortex numerous pseudotubercles measuring up to 0.25 cm. in greatest dimension. In the central portion of these pseudotubercles were nests of eggs of *S. japonicum*, about which there was a decided foreign body giant cell reaction. These giant cells were large, irregular in outline, with eosinophilic cytoplasm, and many individual giant cells contained 100 or more nuclei. The eggs and the associated giant cells were walled off from adjacent tissue by dense collagenous fibrous tissue. About the periphery of these pseudotubercles there was a zone of diffuse infiltration with inflammatory cells, for the most part lymphocytes.

Diagnosis: The diagnosis was schistosomiasis of the brain due to eggs of *S. japonicum*.

Recently, Saunders¹⁶ reported 2 additional cases of cerebral schistosomiasis, both in veterans of service in the Philippines. Through personal communication with one of us (T. H. C.) he has permitted us to include his 2 cases in our present report. A résumé of these 2 cases was given by Dr. Saunders as follows:

CASE 3.—R. J., a white man aged 27, entered Barnes Hospital, St. Louis, on May 2, 1946. He had been infected with *S. japonicum* while serving on Leyte during 1944. Apparently, however, the infection was not recognized at that time and

16. Saunders, G. M.: Personal communication to the author.

He was given simple "worm" medicine, after which his stool was said to be negative for eggs. He continued to suffer malaise and loss of weight. On Nov. 1, 1945, he was discharged from the army. In December of 1945 he began to notice that he had dizzy spells and felt sleepy. He had a feeling of falling to the right or forward. Headaches soon appeared, and by February 1946 these were accompanied by vomiting. He suffered some motor disability with his right leg. He sought the advice of a local physician because of headaches, and it was found that he had papilledema. He was referred to a neurosurgeon.

On admission to Barnes Hospital it was found that he had diminished visual acuity (right 10/30, left 10/20) with some haziness of the margins of the right disk. A ventriculogram made on May 6 showed that the right ventricle was pushed far to the left. A decompression operation was done and a tumor mass, granular in appearance, was found in the right cerebral hemisphere. This was removed and found to consist of granulomatous reaction around numerous eggs of *S. japonicum*. Postoperatively he did fairly well, but stools showed the presence of *Schistosoma* eggs. He was treated with stibophen and they disappeared.

The patient was seen in February 1947, when he complained of continuing headaches which kept him from working. However, he had no weakness or motor difficulty, although *Schistosoma* eggs have been found and he has had more treatment with stibophen at one of the Veterans Administration installations.



Fig. 7.—Another granuloma from the same case as in figures 5 and 6. Necrotic ova are surrounded by giant cells and epithelioid cells. These in turn are imbedded in dense hyalinized matrix about which there is moderate chronic inflammatory reaction.

CASE 4.—E. C., a white male veteran aged 38, was admitted to the Veterans Hospital May 14, 1946. Past history is incomplete but indicates that he served in the army for eighteen months in the South Pacific area. On April 20, 1946, he experienced dizziness and flashes of red light before his eyes. Four days later his right arm became paralyzed and his legs

partially paralyzed. He was admitted to the hospital with a diagnosis of left hemiplegia. Visual fields were found to be constricted and roentgenogram of the skull showed evidence of increased intracranial pressure. No papilledema was noted. There was noticeable muscular weakness of the extremities on the left. Lumbar puncture revealed that spinal fluid was under increased pressure. A subsequent note made two days later stated that fundusoscopic examination revealed papilledema of 3 D. bilaterally, and perimetry revealed homonymous hemianopsia on the left. Encephalograms showed incomplete filling of the left lateral ventricle.

On July 11 craniotomy was done, which revealed a deep-seated tumor in the left hemisphere. This was found to be partially adherent to the dura at the base of the middle cranial fossa. This mass was excised and found to contain eggs of *Schistosoma*. The patient had a stormy postoperative course. He was treated with several courses of stibophen. Observation after several months showed some residual paralysis with a moderate motor aphasia.

COMMENT

Schistosoma is classified under the phylum Platyhelminthes (flat worms), class Trematoda (flukes). There are three principal species which are pathogenic for men: (1) *S. haematobium* (causing Egyptian or urinary schistosomiasis); found almost exclusively in Africa; (2) *S. mansoni* (causing Manson's intestinal schistosomiasis), prevalent in Africa, the West Indies and Northern South America, and (3) *S. japonicum* (Asiatic schistosomiasis), with foci in Japan, Formosa, China, the Philippines, Celebes and reportedly also in Burma along the Chinese border. The lesions in our 2 cases were produced by eggs of *S. japonicum*, as the morphology of egg species is diagnostic.

Ash and Spitz¹⁷ in their "Pathology of Tropical Diseases" stated that "the deposition of ova rather than the intra-vascular presence of the adult worms accounts for the great majority of clinical symptoms and the pathological lesions in schistosomiasis. *Schistosoma japonicum* infection is by far the most acute and severe, the daily output of eggs for each worm being 50-300; *S. haematobium* infection is moderately severe as a result of a daily output of 20-30 eggs; *S. mansoni* infection runs the mildest course with 1-4 eggs daily." Faust¹⁸ questioned the validity of the statements about egg production per day for the three species of worms. He observed: "It would be much more accurate to state that at any one time the number of eggs in utero is the figure that Ash and Spitz have given. However, this does not necessarily mean that there is only one uterine filling with eggs per day."

The distinction of eggs of these three species of *Schistosoma* is well known: The *S. mansoni* egg has a prominent lateral spine and measures 114 to 175 by 45 to 68 microns; the *S. haematobium* egg has a long terminal spine and measures 112 to 170 by 40 to 70 microns; the *S. japonicum*-egg has only a rudimentary lateral spine which is usually not seen. It is much smaller than the eggs of the other two species, measuring 70 to 100 by 55 to 65 microns. There would be no difficulty in making differential diagnosis on this basis, even when only portions of egg shells are available.¹⁸ In our specimens the spine was not well demonstrated, but from the size of the eggs one could readily make the diagnosis of *S. japonicum*.

A knowledge of the principal features of the life cycle of *Schistosoma* is required for an understanding of the disease produced by it and for early diagnosis and intelligent therapy. The adult *S. japonicum* typi-

17. Ash, J. E., and Spitz, S.: Pathology of Tropical Diseases, Philadelphia, W. B. Saunders Company, 1945, pp. 274-275.

18. Faust, E. C.: Personal communication to the author.

cally becomes lodged in the venules of the intestines. Here the female worm deposits her eggs. (She may continue to do so for ten to twenty years or even longer if the patient survives.) Some of these eggs are extruded into the bowel and discharged with the feces. Soon after the eggs gain access to water they hatch, giving rise to fully developed, free-swimming miracidia. The miracidium seeks an intermediate host which it must find in one or two days or it perishes. If it succeeds in finding the appropriate intermediate host (a species of snail belonging to the genus *Katayama* or *Oncomelania*), it enters the soft tissues and undergoes further development and reproduction. The intermediate stage requires several weeks and is necessary for the production of fork-tailed free-swimming larvae, the cercariae, which are infective for man. (The miracidium is not infective for man). The cercariae, after leaving the snail, migrate near to the surface of the water and here may come in contact with the skin of man or mammal, their final host. If they do not find this host in one or two days, they will not survive. On coming in contact with the skin of man they lose their tails and penetrate the skin, soon to enter the cutaneous venules. The larval form is now known as the schistosomulum. It is carried by the systemic circulation through the right side of the heart and the lungs. The larvae penetrate into the pulmonary venules and pass to the left side of the heart, from which they are disseminated through the systemic arteries. It is generally believed that only those which get to the liver survive and develop to maturity. They are next found in the radicles of the portal vein where they feed and grow. Then, going against the current, they become lodged in the veins of the intestinal wall. Here maturity and mating are finally achieved. About four to six weeks after the cercariae enter the body, eggs usually begin to appear in the feces.

The pathology of schistosomiasis and the clinical manifestations can be anticipated and more fully understood with these fundamental features of the life cycle in mind. Clinically there are three generally recognized stages corresponding to (1) invasion of the body by the cercariae until maturity of the worms, (2) deposition and extrusion of eggs and (3) proliferation and repair. It is emphasized, however, that the signs and symptoms of these stages overlap one another, especially in the presence of reinfection.

The first stage, that of invasion and growth, extends from the penetration of the skin by the cercariae up to the deposition of eggs by the mature female. It lasts from four to six weeks. The symptoms may develop from five days to ten weeks after the initial invasions through the skin. As one might expect, many of the manifestations are suggestive of developing sensitivity to a foreign body, the schistosomula and the chemicals liberated from them. Urticarial wheals of the skin and mucous membranes, fever, chills and muscle pains are frequently observed. There is leukocytosis and almost always eosinophilia, which may rise to 70 per cent or more. Pulmonary signs are often prominent in the form of a dry unproductive cough and patches of increased density throughout the lung as demonstrated by roentgen rays. These are presumably pulmonary reactions to the presence of these migrating organisms in the lungs.

The second stage accompanies the deposition of the eggs. Here the eggs escape from the venules into the

tissues of the bowel wall. How this is accomplished remains unsettled, although it is believed that a multiplicity of factors may be at work. A lytic enzyme from the egg probably helps to dissolve or necrotize the wall of the vessel. The spine is so rudimentary that its presence is not likely to damage the wall of the vessel as it sometimes does in *S. mansoni* infection. However, the increased venous pressure arising from the blockage of the venule by the adult worms, together with the peristaltic movements of the gut, undoubtedly contribute to the extravasation. An intense inflammatory reaction is set up around the eggs which become lodged in the bowel wall, with the formation of small pseudo-abscesses. These often rupture, releasing the content into the bowel, causing extreme intestinal irritation associated with dysentery, distention, tenderness and fever. The stools may contain considerable amounts of blood and mucus. During this second stage anemia, leukopenia and neutropenia and hepatic and splenic enlargement often develop, but characteristically there is a drop in the number of eosinophils.

Following this trauma to the bowel the third stage gradually succeeds the second stage. It may occur from one to five years after infection and may be manifested by a cirrhotic liver, enlarged spleen, ascites, edema of the extremities, anemia, dysenteric exacerbations and cerebral symptoms such as blindness, hemiplegias and jacksonian fits. In the third stage the prolonged inflammatory reaction in the bowel gives rise to fibrosis, thickening and scarring. The eggs which are being deposited continuously find greater difficulty in getting through the bowel wall because of this scarring. They then begin to float up with the portal circulation, where they become lodged in the fine radicles of the portal vein in increasing number, or they are carried by the accessory portal circulation into the pulmonary arterioles. They give rise to intense inflammatory reaction, thrombosis and fibrosis. In the liver this gives rise to atrophic cirrhosis associated with splenomegaly, simulating Banti's syndrome. Often during this stage the stools are devoid of eggs. Anemia may be severe and eosinophilia is usually of low grade by this time.

Batson¹⁰ in his demonstration of the vertebral venous system and its role in the spread of metastases provided an equally simple, adequate explanation for the distribution of *Schistosoma* eggs outside of the closed system in which they are usually found. He also furnished a basis for explaining how nests of such eggs may be found in a focus in the brain, abdominal skin, intercostal tissues or other arteriolar focus. Faust and other investigators supported this explanation.¹⁸

Most authors have claimed that cerebral schistosomiasis occurs more frequently in the third stage than earlier in the disease. But in 4 of Carroll's 4 cases the neurologic manifestations took place in the acute stage. Carroll¹² expressed the opinion that patients having cerebral schistosomiasis in the acute stage differ somewhat in their clinical manifestations from those having cerebral schistosomiasis later.

They had the onset of paralysis . . . within the first six months of exposure. There was drowsiness usually followed by coma and incontinence. There were signs of pyramidal tract involvement with weakness, spasticity, exaggerated deep reflexes and usually Hoffman or Babinski. There was

19. Batson, O. V.: The Function of the Vertebral Veins and Their Role in the Spread of Metastases. *Ann. Surg.* 112: 138-149, 1940.

generally a high eosinophilia. As a rule the neurological signs started to improve when the temperature reached normal. . . .

Neurological involvement in the late stage was manifested by Jacksonian convulsions followed by the development of a hemiplegia but without drowsiness, coma or incontinence.

Our 2 cases apparently belong to the chronic stage of cerebral complications.

Vitug and Cruz⁹ in a report of necropsy in a case of cerebral schistosomiasis stated:

The finding of egg nests in the brain like those found in the liver and wall of the colon presented a pattern of egg distribution typical of direct deposition, according to Faust. Since there is no multiplication of the parasite after skin penetration, it is possible that, aside from the usual migration from skin to the portal circulation, schistosomes might be carried by the circulation to the brain, where they develop and deposit their eggs. From anatomical considerations the route of infestation is by way of the internal carotid artery into the left choroid and middle and anterior cerebral arteries. The location of the ova in the choroid plexus and in the subarachnoid spaces over the cerebral cortex makes possible their discharge into the cerebrospinal fluid circulation and by their own weight they may gravitate into the lumbar region. It is thus possible clinically to obtain the ova by spinal puncture and demonstrate them by microscopic examination of the fluid.

The last statement is of a speculative nature. These workers failed to find the eggs of *Schistosoma* in the spinal fluid in their 2 cases. We can find no reports in the literature stating that this has been demonstrated, nor do we believe that it will prove to be a specific diagnostic procedure for the confirmation of cerebral schistosomiasis. We are of the opinion that as soon as the eggs are deposited in the brain an intense reaction will be set up by the surrounding tissue to form a cerebral granuloma, so that the degenerated eggs are well walled off inside this low grade inflammatory mass. Consequently there would be little chance for the eggs to get into the free cerebrospinal fluid and gravitate down to the lumbar region.

Speigel,²⁰ after an extensive review of the literature and pathologic study of surgically removed specimens, concluded that "there is evidence that the adult parasite may reach the brain either by ascending against the venous stream to the cerebral tissue or by traveling with the blood stream to the brain as arterial emboli." Greenfield and Pritchard¹³ stated that "the earliest symptom of cerebral involvement by the ova is usually focal epileptic seizures and the left hemisphere is most frequently involved."

Meleney²¹ gave an outline of the medical treatment of schistosomiasis. He mentioned the use of stibophen, potassium antimony tartrate and emetine hydrochloride. If the disease is attacked medically in the first or second stage, before showers of eggs have reached the liver, the prognosis is generally favorable. If, however, the liver has been invaded by a large number of eggs, the inflammatory reaction, thrombosis and fibrosis may lead to irreparable damage and atrophic cirrhosis, terminating in death in three to five years or more. Meleney and some investigators²¹ stated the belief that stibophen is the best antimony preparation for the treatment of schistosomiasis. It was considered as standard treatment in 1943 primarily because of the

experience of Khalil²² in Egypt. But Lee²³ found it unsatisfactory for oriental schistosomiasis and the failure of the drug, even when employed in almost doubly recommended dosage, was amply documented by American and Australian experience on Leyte. Faust (cited by Speigel²⁰) stated that the most satisfactory therapeutic results are obtained by administering antimony potassium tartrate (0.5 per cent solution) over a period of four weeks with a total of 320 cc. of the solution, or 0.576 Gm. of metallic antimony in the drug. He expressed preference for the use of antimony potassium tartrate rather than stibophen by stating that "105 cc. of Fuadin containing 0.941 Gm. of metallic antimony is not invariably curative." The present recommendation approved by the United States Army is to employ a 0.5 per cent solution of potassium antimony tartrate intravenously, beginning with 6 cc. and working up to 24 cc. on alternate days, until approximately 0.6 Gm. of metallic antimony has been administered. In spite of this statement, stibophen is still being widely used in the United States Army. Some investigators still express the opinion that stibophen is the medicine of choice for the treatment of schistosomiasis, especially in chronic cases.

For cerebral schistosomiasis, and from the neurosurgeon's point of view, we strongly recommend craniotomy as an adjuvant to the medical treatment, when there is evidence of a localized expanding lesion. We believe that craniotomy and biopsy are the only definite means of confirming the diagnosis in cases such as the 4 here reported in which there is not a definite history of an acute stage or in those cases which have passed the acute stage with treatment some time previously. For lesions situated on the surface of the brain and well localized in one area, complete removal can sometimes be achieved. Craniotomy also has the effect of relieving the intracranial tension which might be an impending danger in certain cases of schistosomiasis of the brain. Should circumstances prevent the carrying out of craniotomy with impunity, a subtemporal decompression should be done immediately to relieve the increased intracranial pressure; this we believe at times is a life-saving procedure and might well prevent the loss of eyesight in some cases in which a great increase in intracranial pressure occurs.

Without the aid of craniotomy, the diagnosis of cerebral schistosomiasis cannot be made with certainty; at best it may be strongly suspected in a given case, but a neoplasm or histoplasmosis cannot be ruled out. Clinically the diagnosis is established with the aid of (1) history of exposure, (2) clinical manifestations, (3) demonstration of the eggs in the stool specimen and (4) eosinophilia. Tillman¹⁴ mentioned in his paper the differential diagnosis of cerebral schistosomiasis from other cerebral diseases. As a whole, all the clinical diagnostic points are indirect and presumptive, except when eggs can be found. Faust¹⁸ expressed the opinion that, if good laboratory assistance is available and is supplemented by proctoscopic studies, all or essentially all of these cerebral cases should have adequate confirmatory diagnosis.

Speigel²⁰ in January 1947 reported a case of cerebral schistosomiasis in which treatment was by surgical

20. Speigel, I. J.: Cerebral Schistosomiasis: Report of a Case with Surgical Removal of an Intracerebral Mass of Schistosomal Ova, *J. Neurosurg.* 4: 72-79, 1947.

21. Meleney, H. B.: Schistosomiasis, *M. Clin. North America* 27: 848-861, 1943.

22. Khalil, M., and Betache, M. H.: Treatment of Bilharziasis with a New Compound "Fuadin": Report on 2,041 Cases, *Lancet* 1: 234-235, 1933.

23. Lee, C. U., and Chung, H. L.: Treatment of Schistosomiasis Japonica with Fuadin in Man, *Chinese M. J.* 47: 1411-1420, 1933.

removal of an intracerebral mass of *Schistosoma* eggs and added 2 more cases from the literature to the list of 8 cases given by Carroll;¹² i. e., one of Shimidzu²⁴ and one of Edgar.⁷ Faust²⁵ stated that a year after the first exposure following the landing of the American military forces on Leyte, on Oct. 20, 1944, more than 1,000 cases of schistosomiasis japonica had been studied in the army general hospitals; from these Thomas and Gage²⁶ reported 2 with neurologic lesions which had been observed before return to the United States. Faust also mentioned 3 other cases which he saw in the 118th General Hospital on Leyte and presented a clinical case referred to him by Speigel and an autopsy case by McNamara. Watson and others²⁷ reported a case of schistosomiasis of the brain due to *S. japonicum*: The patient was infected on Leyte

were confirmed by autopsy.²⁸ Three cases of surgical removal of a mass of *S. japonicum* eggs were cited by Speigel; namely, 1 by Shimidzu²⁴ and 2 by Greenfield.¹³ Speigel's case was the fourth one. Watson's case was the fifth one. The present report adds 4 cases to this list.

SUMMARY AND CONCLUSIONS

A brief review is given of the literature on cerebral schistosomiasis, and the principal features of the life cycle of *Schistosoma* are outlined. The fate of the worm, the deposition of the eggs in various parts of the body and the genesis of schistosomiasis of the brain are discussed.

Four cases of cerebral granuloma caused by *Schistosoma japonicum* eggs, seen in the brain of living subjects on the operating table, are presented. In our second case, a correct diagnosis was arrived at before craniotomy. All four cases were confirmed by microscopic section made from the biopsy specimens.

The medical treatment for schistosomiasis is discussed. Craniotomy is recommended as an adjuvant to the medical treatment for cerebral schistosomiasis.

Our 2 cases, together with the 2 studied by Dr. Saunders, have a fivefold significance: (a) they are to our knowledge the eleventh, twelfth, thirteenth and fourteenth pathologically proved cases of cerebral schistosomiasis japonica, and the sixth, seventh, eighth and ninth cases treated by surgical removal reported in the world literature; (b) they illustrate the possibility of cases of cerebral schistosomiasis presenting themselves as diagnostic problems in this country thousands of miles from where *S. japonicum* is endemic; (c) they present some of the criteria by which the diagnosis may be made; (d) our second case illustrates that the diagnosis can be made or strongly indicated preoperatively if there is sufficient awareness of the disease, and (e) neither of our patients gave a history of having had symptoms and signs indicating the acute phase of schistosomiasis before they had the neurologic manifestations. A history of early systemic schistosomiasis is not necessary in the diagnosis of cerebral schistosomiasis.

TABLE 2.—Summary of Reported Cases of Cerebral Schistosomiasis with Reference to Treatment

Author	Year of Report	Treatment by Surgical Removal	Treatment by Medicine Alone
Yamaguchi, cited by Faust and Melency ⁴	1890	..	1
Tsunoda ²	1900	..	1
Houghton, cited by Faust and Melency ⁴	1910	..	1
Chu, C. P.: Chinese M. J. 52: 651, 1931, cited by Faust, E. C.; Wright, W. H.; McMullen, D. B., and Hunter, G. W.: Am. J. Trop. Med. 26: 87, 1946.....	1931	..	2
Niera ¹⁰	1935	..	1
Shimidzu ²⁴	1935	1	..
Spridion ⁵	1936	..	3
Egan ⁶	1936	..	2
Edgar ⁷	1936	..	1
Greenfield ¹³	1937	2	..
Africa ¹¹	1939	..	1
Hoff and Shuby ⁸	1939	..	3*
Vitug ⁹	1941	..	2
Thomas and Gage ²⁶	1945	..	2
Carroll ¹²	1946	..	4†
McNamara, cited by Faust ²⁵	1946	..	1
Billings, F. T.; Winkenwerder, W. L., and Hunnien, A. V.: Bull. Johns Hopkins Hosp. 78: 21, 1946.....	1946	..	2†
Tilman ¹⁴	1947	..	6†
Speigel ²⁰	1947	1	..
Watson, Murphey and Little ²⁷	1947	1	..
Total.....		5	33
Grand total.....		38	

* Caused by *S. haematobium*.
† Duplications found by Billings are omitted.^{12a}

and had convulsive seizures one hundred and fifty-six days after the exposure. Craniotomy was done twice, with much improvement of the patient's condition.

To summarize all the reported cases of cerebral schistosomiasis, with regard to treatment, table 2 is presented.

As shown in the table, up to the present time there are 38 reported cases of schistosomiasis of the brain; in 5 of these treatment was by craniotomy and surgical removal of the mass of *S. japonicum* eggs. Of these 38 cases 5 were surgically proved. The other 33 cases were diagnosed on a clinical basis, and a small number

28. Faust and Melency.⁴ Vitug, Cruz and Bautista.⁹ Africa and Santa Cruz.¹¹ Tsunoda and Shimamura.² Faust.²⁵

Arteriosclerosis and the Ductus Arteriosus.—The ductus arteriosus is a true muscular organ which on proper stimulation is capable of contracting strongly enough to obliterate its lumen. The stimulation is apparently the increase of the oxygen saturation of the arterial blood brought about by the onset of respiration in the newborn infant. After the contraction has been maintained for several days, actual histologic changes take place. Muscle tissue is replaced by tissue of a lower order of specialization. In some cases, the replacement is slow, and no necrosis occurs; however, in others rapid degeneration with necrosis and calcification takes place. The cause of this tissue replacement and degeneration appears to be relative anoxemia of the wall of the ductus brought about by contraction of the muscle. This contraction narrows the lumen, compresses the vasa vasorum and thus decreases the blood supply of the vessel wall. These tissue changes occurring in the ductus arteriosus as the result of anoxemia seem to be similar to those observed by Hueper in arteriosclerosis. The work recorded in this paper, therefore, leads to the opinion that anoxemia plays a large part in arteriosclerotic processes and may possibly be the fundamental mechanism through which the various causal agents bring about arteriosclerotic changes.—Blumenthal, Lester S., Pathologic Significance of the Ductus Arteriosus, *Archives of Pathology*, October 1947.

24. Shimidzu, K.: Ein Operationsfall von Schistosomiasis cerebri, Arch. f. klin. Chir. 182: 401-407, 1935; cited by Speigel.²⁰
25. Faust, E. C.: Schistosomiasis Japonica: Its Clinical Development and Recognition, Ann. Int. Med. 25: 585-600, 1946.
26. Thomas, H. M., Jr., and Gage, D. P.: Symptomatology of Early Schistosomiasis Japonica, Bull. U. S. Army M. Dept. 4: 197-202, 1945.
27. Watson, C. W.; Murphey, F., and Little, S. C.: Schistosomiasis of the Brain Due to *Schistosoma japonicum*; Report of a Case, Arch. Neurol. & Psychiat. 57: 199-211 (Feb.) 1947.

PERIODIC DISEASE

A Probable Syndrome Including Periodic Fever, Benign Paroxysmal Peritonitis, Cyclic Neutropenia and Intermittent Arthralgia

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Because of their rarity, or because they are overlooked, disregarded or mistaken for other conditions, little attention has been paid to certain peculiar, benign syndromes which last several days and recur for years at remarkably regular, short intervals. In naming them the adjectives periodic, cyclic, rhythmic, episodic, relapsing, paroxysmal, recurrent and intermittent are used interchangeably before the noun indicating the outstanding characteristic, as noted in the title and in the references. In this paper, studies of 6 patients with periodic diseases, three featured chiefly by fever and abdominal pain, one by neutropenia, one by arthralgia and one by myasthenia, are reported and compared with those of similar and different periodic diseases which have been noted by others. Each causes periods of temporary disability, which recur for years with predictable accuracy and uniformity. Since all 6 patients are under observation, the duration and outcome of their ailments cannot be stated.

PERIODIC FEVER

CASE 1.—The detailed report of study of this patient, Mrs. N. W., aged 49, appears elsewhere¹ and, in brief, is as follows: There is no record of tuberculosis, syphilis, rheumatic fever, mental disorder, epilepsy or migraine in the family. The patient had epileptiform attacks which ceased when menstruation began at 14 years of age. She had two difficult pregnancies; the last in 1921 was complicated by pyelitis. Her present trouble began in 1936 with spells of irritability, chilliness and sweating which occasionally obliged her to spend a day or two in bed and were mistaken for the signs of early menopause. She soon noticed that the episodes recurred at regular intervals of seven-teen to twenty-one days and were accompanied by fever and other symptoms. Death of her husband in 1941 caused mental depression for several months, and the febrile episodes became more severe. She first entered the hospital in 1941. Because of the pyelitis in 1921 and the presence of abdominal and lumbar pain, pyelitis of banal or tuberculous origin was suspected but ruled out for lack of evidence. The patient came under my observation in 1943 and was studied during numerous long periods in the hospital up to the present.

The bouts have gone on without much change in their nature for eleven years. They last five to seven days and recur with such regularity every seventeen to twenty-two, usually eighteen, days that the onset of each subsequent one can be predicted with as much accuracy as the menstrual period (chart 1). The menstrual periods occur in regular twenty-seven to twenty-nine day cycles and have no obvious relation with, or influence on, the febrile attacks whether they coincide or not. The febrile episodes are often preceded by an increase of the pulse rate and begin with a feeling of warmth, restlessness, irritability and aching and a rise in temperature. In a day or two the irregular temperature reaches 39 C. (102 F.) and occasionally 39.5 C. (103 F.), with weakness and malaise as constant features. A chill or chilliness, flushing, nausea, vomiting, headache and pains in the abdomen, flanks, arms, hands, legs and feet with tingling occur in varying combinations and degrees of severity during different episodes. In the intervals between attacks the patient feels well. Her weight is normal and constant.

In repeated examinations during the last six years no significant abnormalities were detected in the free periods. During

the bouts, there is flushing, slight puffiness of the face and occasional sweating. Rectal temperature readings matched oral ones. Roentgenographic study showed no abnormalities in the chest or abdomen. Several electrocardiograms and encephalograms were normal. Pelvic, neurologic and psychiatric examinations revealed no disturbances. Laboratory studies were not helpful. The erythrocytes, hemoglobin, urine, blood pressure and basal metabolism were normal. Renal and hepatic function tests, tests for agglutination and cutaneous tests for numerous bacteria, the fragility test, the Congo red test, the Wassermann test, the heterophil antibody and cold agglutinin tests and blood cultures all gave negative results. Estrogens, gonadotropins and pregnandiol were excreted in normal amounts. The only abnormalities are occasional panleukopenia (2,000 to 3,000 cells) at irregular intervals not related to the fever, constant monocytosis (between 7 and 21 per cent), a persistent increased sedimentation rate of about thirty minutes and an increased amount of globulin in the blood. On several examinations the sternal marrow contained an increased number of eosinophils, basophil cells and plasmacytes.

Several procedures failed to modify the rhythm of the febrile bouts. The menstrual cycles were disturbed at different times by the administration separately of diethylstilbestrol, estradiol benzoate, progesterone and testosterone propionate without significantly altering the febrile attacks. Thyroid substance, quinine sulfate, sodium diphenylhydantoin and roentgen therapy directed at the spleen also caused no changes. On one occasion, antityphoid vaccine injected intravenously caused its usual febrile reaction three days before an expected episode, which occurred punctually but consisted of only two days of slight

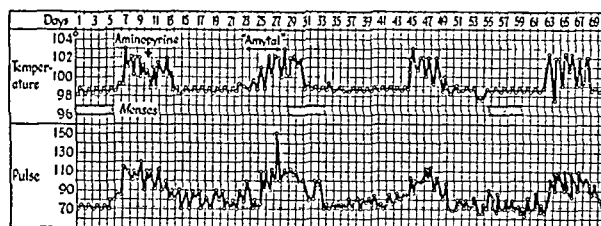


Chart 1 (case 1).—Episodes of fever and tachycardia lasting five to seven days and recurring every nineteen to twenty-one days, in no relation to the menstrual periods. Aminopyrine depressed the fever; "amytal" narcosis had no effect.

fever. The procedure was repeated but without a similar effect. Antipyretic drugs depressed the temperature, contrary to their ineffectiveness in the hyperthermia related to menstruation.² Sedatives had no effect.

Up to the present (December 1947) the episodes recur unchanged. No additional physical or other changes have developed. No cause for the condition has been discovered and no evidence of Hodgkin's disease, neoplastic disease, infection, neurologic, allergic or psychic disturbance or of hereditary influence is present.

CASE 2.—S. L., a Jew, aged 27, ten years previously noted periods of headache and vomiting every month or two. They were supposedly of nervous origin caused by discomfort or poor food while living away from home. The episodes began with pain in either side of the chest, shoulders or abdomen, severe headache, aching of the extremities, nausea, usually vomiting, and temperature of 39.5 C. (103 F.). They lasted about two days and were separated by intervals of good health. The intervals gradually shortened to thirty day cycles, finally to seven days. For a period of six months, while a limited diet was being taken, the attacks ceased, but they were resumed in 1939 after immigration to the United States. He was extensively studied at several hospitals where some teeth, his tonsils and appendix were needlessly removed. All studies, including exploratory laparotomy, gave no clues as to the cause.

Despite his record he was inducted into military service in 1941 and carried out his duties except for the weekly inter-

From Jefferson Medical College and Hospital. Presented before the Medical Association of Puerto Rico, San Juan, Dec. 12, 1946, and the California State Medical Association, Los Angeles, May 2, 1947.

1. Reimann, H. A.: Regularly Periodic Fever of Eleven Years' Duration: Report of a Case, *Acta med. Scandinav.* (Hilding Berglund S. app.) 196: 666-673, 1947.

2. Reimann, H. A.: (a) The Problem of Long-Continued, Low Grade Fever, *J. A. M. A.* 107: 1089-1093 (Oct. 3) 1936; (b) Habitual Hyperthermia, *ibid.* 99: 1860-1862 (Nov. 26) 1932; (c) *Arch. Int. Med.* 55: 792-808 (May) 1935; (d) *J. A. M. A.* 132: 114 (Sept. 21) 1946.

ruption by his ailment. For this he was again extensively studied in several army hospitals, but was sent overseas where the attacks were worse. He was returned to this country in 1944 and spent six months in another army hospital, where all roentgenologic and laboratory studies, cystoscopy, proctoscopy, skin tests and others failed to yield helpful information. The only findings were repeated attacks of fever, as shown in chart 2, with leukocytosis. Courses of sulfonamide compound, penicillin and emetine therapy did not influence the fever. He was discharged as having febricula, cause undetermined. He then entered another hospital in 1946 for herniorrhaphy, and was finally referred to me by Dr. Edward Weiss in January 1947.

Because the patient is employed and cannot afford to spend time in the hospital for studies, he recorded his own temperature, as shown in the right half of chart 2, and his symptoms. The episodes have lessened somewhat in severity, and he is able to remain at work if acetylsalicylic acid is taken during them. They recur every five to nine days, usually every seven. On one occasion before an expected episode he entered the hospital for study but was displeased with the ward accommodation and left the next day. For unknown reasons or perhaps because of this disturbing experience, for the first time in many months the slight early symptoms failed to deepen and the oral temperature rose slightly but remained normal. The rectal temperature rose to 37.9 C. (100.2 F.), as shown in chart 2. The next bout recurred on time in its usual form and the temperature rose higher since he refrained from taking acetylsalicylic acid. The pulse rate, usually 74, was 120 per minute, and he was pale and dry. Hirsutism is prominent. There was abdominal tenderness on pressure, but no other abnormal signs. The leukocytes numbered 11,500, with 70 per cent polymorphonuclear



Chart 2 (case 2).—Episodes of fever lasting a day or two at five to eight day intervals recorded at an army hospital in 1943, and during current observation. On one occasion in 1947 the rectal temperature alone reached fever levels.

cells, 20 per cent lymphocytes and 10 per cent monocytes. The erythrocytes and hemoglobin were normal. Between episodes his leukocytes number 7,000, he appears to be healthy and well adjusted, and his weight is normal. Six hours of fever caused by the intravenous injection of antityphoid vaccine during one free interval suppressed the next expected episode, but the following one occurred punctually and unchanged.

CASE 3.—A physician, aged 37, first noted attacks of "peritoneal irritation" three years previously, in May 1944. They have recurred at intervals of two to six weeks, usually four weeks, with good health between them. An episode begins with pain in the abdomen, tenderness to pressure and colic. The temperature rises to 38.9 C. (102 F.). Nausea and occasionally diarrhea occur, but no vomiting. The leukocytes rise to 12,000 to 19,000 in number with no disturbance in the proportion of component cells. After twenty-four to thirty-six hours the temperature becomes normal but the symptoms persist forty-eight to sixty hours. All studies to determine the cause of the condition have been unhelpful.

Other patients with conditions remarkably similar to the one just mentioned have been described. Janeway and Mosenthal³ in 1908 observed a Jewish girl of 16 who had had recurrent attacks of fever and abdominal pain since early infancy. The intervals at first were monthly but later shortened to seven days. During this time there was only one ten week period free from attacks. The attacks varied in intensity; occasionally one would be symptomless, but the tem-

perature rose slightly, on schedule. In the severe ones there were prostration; anorexia; colic; pain in the shoulders, hips and feet, as described in cases 1 and 2; a temperature of 40 C. (104 F.); tachycardia; leukocytosis (28,000 cells), and an increase in the excretion of uric acid and creatinine. There were salivation, nausea, belching and occasionally vomiting. The discomfort lasted eight to sixteen hours. Abdominal rigidity suggested peritonitis but appendectomy had no effect. Immediately after an episode the leukocyte count returned to normal but with polymorphonuclear leukopenia (30 to 36 per cent). No eosinophilia was recorded.

Cooke⁴ made further studies of the patient twenty-four years later which he reported in 1933. An allergic basis was suspected as the cause, although all tests for protein sensitivity were negative. After milk was withdrawn from the diet, attacks were said to have stopped. Joslin, who discussed Janeway's paper in 1908, cited an almost identical case in a nursemaid, but no details are available. Alt and Barker's⁵ patient, a youth of 18, had attacks of abdominal pain, pain in the right arm, shoulder and chest, vomiting, occasional splenomegaly, fever and polymorphonuclear leukocytosis (20,000), beginning at the age of 4 and recurring at first four to six times a year, then gradually oftener until the interval was a week, and when the patient was last heard from, three or four days. Removal of an enlarged spleen had no effect on the recurrent attacks, which were observed for thirteen years. The patient was otherwise well. His brother was said to have identical attacks.

Scott and Kirshner⁶ described a patient whose episodes begin between 5 p. m. and 6 a. m. with itching and urticaria, followed by a chill, malaise, temperature of 40.5 C. (105 F.), leukocytosis and occasionally arthralgia. They recur at intervals of forty-eight hours to seven days, usually two to three days, and last eighteen hours. He is well in the free periods. Tests for sensitivity to numerous proteins gave negative results. Various forms of treatment including foreign protein shock and transfusions had no effect. According to a letter from his present physician, Dr. T. H. Gillison in England, the man, now 41 years old, is still having his attacks after fourteen years. Some form of allergic edema is suspected to affect the heat-regulating center.

Wolf and Wolff⁷ reported the case of a man of 43, previously studied by Allen,⁸ whose episodes were characterized by fever, leukocytosis and pain in the abdomen and extremities. They lasted about twelve hours, recurred weekly and were observed for twelve years. They apparently replaced migrainous episodes which had recurred in six preceding years. The patient was emotionally unstable; the fever at times seemed to be related to psychic influences, and the episodes were influenced by sodium diphenylhydantoinate. The patient's father had similar episodes for fifteen years between the ages of 25 and 40. They stopped spontaneously.

Under the title benign paroxysmal peritonitis, Siegal^{9a} reported 10 similar cases, 8 of which were

4. Cooke, R. A.: Gastrointestinal Manifestations of Allergy, *Bull. New York Acad. Med.* 9: 15-24 (Jan.) 1933.

5. Alt, H. L., and Barker, M. H.: Fever of Unknown Origin, *J. A. M. A.* 94: 1457-1461 (May 10) 1930.

6. Scott, J. W., and Kirshner, A.: An Intermittent Fever of Three and a Half Years' Duration, *Lancet* 2: 299-301 (Aug. 6) 1938.

7. Wolf, S., and Wolff, H. G.: Intermittent Fever of Unknown Origin: Recurrent Fever with Benign Outcome in a Patient with Migraine and Notes on "Neurogenic Fever," *Arch. Int. Med.* 70: 293-302 (Aug.) 1942.

8. Allen, E. V.: Intermittent Hyperthermia of Seven Years' Duration, *Ann. Int. Med.* 10: 1204-1211 (Feb.) 1937.

9a. Siegal, S.: Benign Paroxysmal Peritonitis, *Ann. Int. Med.* 23: 1-21 (July) 1945.

3. Janeway, E. G., and Mosenthal, H. O.: An Unusual Paroxysmal Syndrome, Probably Allied to Recurrent Vomiting, with a Study of N. Metabolism, *Tr. A. Am. Physicians* 22: 504-518, 1908.

in males. The abdominal pain attracted more attention than the fever; hence the name. The periodicity was recorded in weeks or months over many years. Allergy was suspected as an underlying cause in most instances.

Fever occurred with leukocytosis in most of the patients thus far described or cited; in Rutledge's and Reznikoff's patients, to be mentioned later, neutropenia accompanied the febrile episodes.

Better known are the instances of fever, or temperature at fever levels, which occur periodically in many healthy women during the latter half of the menstrual cycle to which they are related.⁹

CYCLIC NEUTROPENIA

CASE 4.—L. F., a Jew, aged 20, is under study by Drs. Tocantins and Woldow, whose detailed report will appear elsewhere. He was discharged from the army because of repeated episodes of leukopenia and disability, first noticed in June 1945. He was studied at this hospital on many occasions. During one study, from December 1945 to April 1946, there were five recurrences at intervals of twenty to twenty-two days, each lasting from five to seven days (chart 3). Between times he felt well although the leukocyte count at all occasions numbered from 3,000 to 4,500 per cubic millimeter of blood, owing to the low number of polymorphonuclear cells. Except for variable but increased numbers of monocytes to compensate for the neutropenia, all other cellular elements of the blood were normal.

The episodes begin with a progressive fall for two or three days, sometimes to zero, in the number of polymorphonuclear cells, accompanied by increasing malaise, headache, sore throat and aching of the body. Tenderness and swelling of the anterior cervical lymph nodes and small ulcers on the tongue and oral mucosa occur. There is seldom any fever or other significant abnormality. The symptoms and signs then gradually abate, the neutrophilic cells increase in number and the patient feels well until the recurrence, the onset of which can be accurately predicted.

This case closely resembles 3 other reported ones. One patient, who during infancy was studied by Leale,¹⁰ was described in 1930 by Rutledge¹¹ when the man was 19 years old and again by Thompson¹² in 1934. He had psychic disturbances and episodes of disease with oral ulcers, granulopenic leukopenia and fever, which lasted from three to ten days and recurred with predictable accuracy at twenty-one day intervals. Between recurrences he was well but unstable emotionally. Communication with this patient eleven years later in 1945 when he was 34 years old, just before death from pneumonia, revealed that the neutropenic cycle persisted at twenty-one day intervals but the constitutional symptoms had disappeared.

Doan's¹³ patient, a woman of 18, had recurrent neutropenia lasting several days accompanied by dermal and oral ulcers at regular eighteen to twenty-one day intervals independent of menstruation, and without fever. During the recurrences, there was relative or absolute neutropenia with a total leukocyte count of 2,000 to 3,000. The monocytes often rose to 50 per cent of the total number. In addition, the patient had congenital hemolytic icterus. After splenectomy, the leukocytes did not fall below 5,000 per cubic millimeter,

but the number of granulocytes continued to fluctuate in the usual rhythm to a lesser extent. It is now sixteen years since the condition was first noted.¹⁴ The patient's mother had hemolytic icterus but not leukopenia.

Reznikoff¹⁵ reported the case of an 18 year old youth who had periodic attacks of fever, "canker sores" and abdominal pain since infancy. The episodes occur every twenty-one days, each lasting ten days, of which four are usually spent in bed because of the severity of symptoms. Leukopenia concurrent with the bouts was discovered at the age of 13. The leukocytes diminish in number to 2,000 or 3,000 per cubic millimeter; the neutrophils vary from 2 to 15 per cent of the cells present. During the depression, the total marrow cell count falls to 1,800. The excretion of 17-ketosteroids measured over a three month period was diminished after the onset of each episode. After splenectomy, the leukocyte count, as in Doan's patient, did not fall so low as before, but the symptoms except for lesser abdominal pain were not changed.

All 4 patients just described had recurrent neutropenia and stomatitis in cycles of twenty-one days. The febrile cycles in case 1 are similar in length but without stomatitis or regularly concomitant neutropenia. Both sexes are affected. In all 5 the cycles recurred every

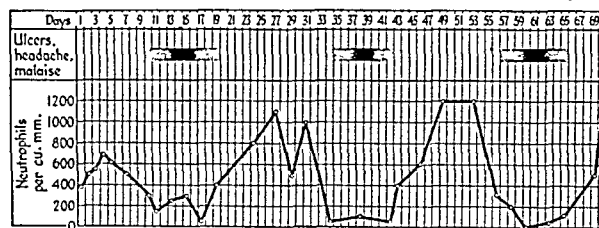


Chart 3 (case 4).—Recurrent neutropenia, oral ulcers, headache and malaise lasting eight to ten days and recurring every twenty-three to twenty-six days. The diminution of neutrophilic cells precedes the clinical symptoms represented by shaded bars to indicate their gradual increase and decrease in intensity.

seventeen to twenty-two days for years; in each there were leukopenia and numerical increase of the monocytes, and each enjoyed good health in the interims. The similarity of behavior suggests that the disease represents a syndrome with a common but unknown cause to which the following periodic conditions may be related.

CYCLIC THROMBOPENIC PURPURA

Demmer¹⁶ reported the case of a 61 year old man who had been impotent for eighteen years and whose family contained members with mental disorder. The patient had regular, predictable periods of purpura every twenty-eight days for six years. Studies during the last few periods before death from chronic nephritis revealed cyclic severe thrombopenia preceding and accompanying purpura. The leukocytes usually were normal in number except for irregular periods of relative neutropenia and compensatory lymphocytosis. Demmer suspected some endocrinologic disturbance as the cause of the condition because of similarity of the temporal rhythm of the episodes to menstrual periods and of the patient's impotence.

9. (a) Reimann,² (b) Oral Basal Temperatures and Ovulation, editorial, J. A. M. A. 131: 32 (May 4) 1946.

10. Leale, M.: Recurrent Furunculosis in an Infant Showing an Unusual Blood Picture, J. A. M. A. 54: 1845-1855 (June 4) 1910.

11. Rutledge, B. H.; Hansen-Prüss, O. C., and Thayer, W. S.: Recurrent Agranulocytosis, Bull. Johns Hopkins Hosp. 46: 369-389 (June) 1930.

12. Thompson, W. P.: Observations on the Possible Relation Between Agranulocytosis and Menstruation with Further Studies on a Case of Cyclic Neutropenia, New England J. Med. 210: 176-178 (Jan. 25) 1934.

13. Doan, C. A.: The Neutropenic State, J. A. M. A. 99: 194-204 (July 16) 1932.

14. Doan, C. A.: Personal communication to the author.

15. Reznikoff, P.: Cyclical Neutropenia: A Case Study with Bone Marrow Findings Before and After Splenectomy, Tr. A. Am. Physicians 59: 276-281, 1946.

16. Demmer, T.: Morbus maculosus Werlhofii in Regelmässigen vierwöchentlichen Schüben bei einem 60 jährigen Mann nebst Untersuchungen über Blutplättchen, Folia haemat. 26: 74-86, 1920-1921

INTERMITTENT ARTHRALGIA

CASE 5.—Mrs. C. B., aged 31, first noticed fleeting pain and stiffness in the right elbow in August 1944. The discomfort lasted a day or two and recurred regularly every thirteen or fourteen days. Three months later, the left knee began to hurt and swell at about the same time, but more severely than the elbow. Walking was painful. In time the disturbance of the knees alone retained its regularity, the stiffness of the elbow either preceding, accompanying or following it and sometimes not occurring at all. The pain and swelling lasts seven or eight days, leaving a free interval of similar duration. Since March 1946 the right knee is synchronously involved though less severely. The rhythm is illustrated in chart 4. Since the menstrual periods recurred in twenty-seven day cycles, alternate attacks of the arthralgia every thirteen or fourteen days coincided for a time with the former, but a subsequent shortening of the menstrual cycle led to unrelated dissociation. In April 1946 two attacks of paroxysmal tachycardia occurred, and in June symptoms and roentgenographic evidence of a duodenal ulcer responded to dietary treatment. Painful spasm in the calf muscles occur without relation to the arthralgia. Quinine sulfate gives relief. Aside from a persistent emotional disturbance and occasional mental depressions which develop from marital incompatibility, there are no other obviously relevant factors in the patient's recent or past history. Her father died from hypertensive disease; her mother and brother are well.

The patient was observed in the hospital on numerous occasions. Except for the swollen left knee during the episodes and the duodenal ulcer, repeated examinations reveal no abnor-

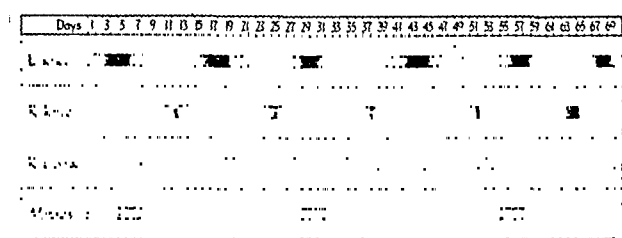


Chart 4 (case 5).—Intermittent arthralgia, lasting five to eight days in the left knee, recurring every thirteen to fifteen days; lesser symptoms in the right knee lagging behind those of the left, and stiffness of right elbow at less regular intervals. Because of the overlapping, there are but few symptomless days. Episodes of arthralgia are in no relation to the menstrual periods.

malities. The pulse rate averages 85, but varies from 60 to 90 beats per minute; fever has not been detected. Electrocardiographic tracings and roentgenograms are normal. Laboratory studies, including agglutination and skin tests for brucellosis, all give negative results. On one occasion 10 cc. of cell-free sterile cloudy fluid was withdrawn from the knee joint.

Experimental therapy with diethylstilbestrol, estradiol, calcium gluconate and vitamin D failed to disturb the regularity or severity of the attacks, although diethylstilbestrol suppressed one menstrual period. Tight binding and roentgen therapy to the left knee failed to relieve the pain or swelling.

The literature on the subject of intermittent arthralgia or hydrarthrosis was reviewed by Comroe.¹⁷ About 120 cases are on record. The cause is unknown, but in certain patients brucellosis, allergy, malaria, lymphogranuloma venereum, psychic factors and endocrine disturbances seemed to be the underlying causes. In some patients arthralgia occurred with the menstrual period and in others it was temporarily relieved during pregnancy. In some instances several members of a family were afflicted. The cycle of attacks in various patients ranged from seven to twenty-one days.

RECURRENT MYASTHENIA

CASE 6.—A. P., a man aged 64, was admitted Oct. 1, 1946, complaining of pain in his left shoulder and chest and generalized weakness for nearly two years.

17. Comroe, B. I.: *Arthritis and Allied Conditions*, Philadelphia, Lea & Febiger, 1941, pp. 589-593.

About two years previously he first noticed occasional difficulty in keeping his right eye open, except by a brace fixed to his glasses. He continued to work but noticed the gradual development of periods of weakness. After four or five months, his arm at intervals would tire so much after using a hammer that he had to change hands or rest until strength returned. Presently the weakness included his legs. Later, severe dysphagia was added to the symptoms. Speech was inarticulate, but would improve after thirty minutes of rest, to relapse after further use. Early in an episode, weakness of the legs made it difficult to stand. After seven to ten days strength would return and normal activity could be resumed except that his former vigor was never regained. In the course of time he noted that the episodes lasted from seven to ten days and were separated by similar free intervals describing a periodicity of fourteen to twenty days.

On admission to the hospital on October 1, the patient lay listlessly in bed, unable to sit up. Speech was interrupted by needed periods of rest before resumption. Both lids drooped. Food was swallowed with difficulty and often entered his nose. Shortly after admission, aspiration pneumonia developed and lasted four days. Except for evidence of loss of weight, muscular weakness, hyperactive biceps, triceps, radial and patellar reflexes and difficulty in speech, the examination was negative in result. The Jolly reaction was positive. A diagnosis of myasthenia gravis was suggested.

Injection of 3 mg. of neostigmine methylsulfate gave striking improvement in thirty minutes which lasted about five hours. By the tenth day, October 10, remission occurred and the patient was able to walk about, but felt weak and tired easily. The Jolly reaction was negative. Partial ptosis of the right lid persisted. The amount of potassium in the blood was normal during and between the episodes.

On October 24, after two weeks of comparative well-being, he noted loss of control of his tongue, then of swallowing, followed by weakness of his arms, then his legs. Another attack of aspiration pneumonia occurred on October 25, and lasted six days. The Jolly reaction again was positive. Shortly after the injection of 3 mg. of neostigmine he ate his meal without difficulty. General improvement began about November 1, and soon he was nearly normal for about a week, when difficulty in swallowing reappeared, on November 8, but lasted only a day. This recurred on November 13, but disappeared after a day with no further recurrence under therapy with neostigmine. The episodes may have been interrupted by the two attacks of pneumonia or more likely by therapy with neostigmine.

During the course of study the question was raised of familial periodic paralysis which like myasthenia gravis appears intermittently but with regularity. The condition is usually, but not always, hereditary and the triad of paroxysmal, flaccid paralysis, loss of reflexes and of electrical excitability and disturbance of potassium metabolism is said to be characteristic.¹⁸ Episodes recur often with regularity at intervals of a few days to a few months.¹⁹ The suggestion is made that it is caused by an inborn error of metabolism or a disequilibrium of the vegetative nervous system with evidence of periodic intoxication, which does not clarify the problem much.

COMMENT

No satisfactory explanation accounts for the regular recurrences of fever, neutropenia, arthralgia and myasthenia in the cases described, or why they take place so punctually and uniformly for so long without interfering with the general health of the patients. Recurrences of fever or other signs, symptoms and laboratory evidence are well known in Hodgkin's disease, non-suppurative relapsing panniculitis, undulant fever, relapsing fever, malaria, migraine, epilepsy and in cer-

18. Talbot, J. H.: *Periodic Paralysis: A Clinical Syndrome*, Medicine 20: 85-143 (Feb.) 1941.

19. Holmes, J. M.: *Familial Periodic Paralysis*, Brit. M. J. 1: 80-82 (Jan. 18) 1941. Mitchell, J. K.; Flexner, S., and Edsall, D. L.: *A Brief Report of the Clinical, Physiologic and Clinical Study of Three Cases of Family Periodic Paralysis*, Tr. A. Am. Physicians 16: 268-278, 1901.

tain psychoses, but they are not so uniform and predictable; for the most part the diseases are eventually recognized by specific changes; they progress or regress, and in some instances the cause is known. However, a regular periodicity of fever was observed in a high proportion of Ask-Upmark's^{19a} series of 352 patients with tumors of the bones, leukemias and anemias.

The episodic diseases in question do not coincide with, or appear to be related to, any known natural intrinsic rhythmic fluctuation such as the menstruation, the estrous cycle of animals, hibernation or the seasonal variation in the number of blood platelets.²⁰ On the other hand, each of the conditions mentioned; namely, fever,⁸ neutropenia with stomatitis,²¹ thrombopenic purpura,²² swelling of the breasts and hydrarthrosis¹⁷ in many other cases has been observed to be synchronous with the menstrual periods and appears to be caused either by the rhythmic endocrinologic changes incident thereto or is precipitated by them. But despite the apparent dissociation of menstruation with the periodic conditions in the cases herein reported or referred to, various authors still suspect the operation of some neuroendocrinologic factor to account for them. Thompson,¹² for example, demonstrated neutropenia in a man synchronous with a fluctuation in the excretion of estrogenic substance similar to the hormonal cycle in women; and in Reznikoff's¹³ male patient, the excretion of 17-ketosteroids was diminished after the onset of the episodes, but similar changes were not present in case 4 of this report. Nor did Stephens and Lawrence^{21c} find a correlation in the excretion of female sex hormone with neutropenia in a female patient who had neutropenia during the menstrual periods. Demmer¹⁰ suspected an endocrinologic basis because of the twenty-eight day cycles of thrombopenic purpura in his impotent male patient, and the same was suggested to account for the periodic swelling of the breast in another impotent male patient.²³ Other observers believed the condition which they described to be connected in some way with hypersensitivity to proteins,²⁴ but the cases they presented and cases 1, 2 and 3 of this report have none of the manifestations of allergy as described in a case of allergic peritonitis.²⁵ Epileptic,⁷ migrainous⁷ or psychopathic²⁶ tendencies have also been held responsible. Since periodic fever as studied by Ask-Upmark^{19a} was encountered mainly in disorders affecting the bone marrow and spleen, the reticuloendothelial system was considered as an important factor in the regulation or disturbance of body temperature. There is indeed evidence of the involvement of the reticuloendothelial system in the cases of periodic fever, neutropenia and thrombopenia as here described, but not in intermittent arthralgia nor in recurrent myas-

themia. It is possible that these conditions are the manifestations of cyclic changes, not necessarily the cause of them. Even if they were, the enigma of regular periodicity would still remain. In some instances,²⁷ and in familial periodic paralysis,¹⁸ a genetic factor is obvious. Emotional disturbance may play a role^{20d, e} in some recurrent conditions but not always in regular cycles over long periods.

Possible Hormonal or Other Cyclic Changes in Men.

—Of the 28 cases of periodic conditions herein discussed or mentioned, 21 were in men. Since, as stated earlier, each of the various clinical conditions at times occurs synchronously with the menstrual cycle or is activated by it in women, there may be an analogous, as yet undetected, cycle in men signalled in similar instances only by the synchronous periodic appearance of the same variety of signs, symptoms or other changes. Support of this possibility rests on a form of climacterium observed in certain men and the suspicion of sexual endocrinologic relationship in men mentioned in the preceding paragraph.

Facts opposed to this proposal are the independence of the periodic conditions from the menstrual cycle in cases 1 and 5 and in Doan's¹³ patient, the absence of evidence of synchronous hormonal excretion in case 4 and the onset of the episodes in infancy in the patients of Janeway,³ Rutledge,¹¹ Alt and Barker⁵ and Reznikoff.¹⁵ The circumstance in the case of habitual hyperthermia reported elsewhere,^{2b, d} in which "fever" was first noted at the age of 5 and later assumed synchrony with the menstrual cycle, suggests that sexual endocrinologic influence does not necessarily cause the various symptoms in either sex but may provoke a latent condition to a degree sufficient for clinical recognition in rhythm with its own cycle.

Regardless of a possible dependence on sex hormonal influence, there are curious cyclic changes in both men and women in the cases described. These may represent the exaggerated forms of similar inherent but symptomless rhythms in many persons which would be detectable only if measurable and countable elements like the erythrocytes, leukocytes, platelets, basal metabolic rate, temperature, pulse and others were accurately registered over long periods. The episodes may rise to clinical significance at any age from infancy²⁸ to the sixth decade (Demmer,¹⁰ case 6) and may stop spontaneously⁷ or during treatment (Cooke,⁴ Ask-Upmark,^{19a} case 6). One may suggest that in the cases presented certain changes occur in the body or certain factors build up or accumulate to a point at which symptoms and signs are caused to reach clinical significance, then dissipate and repeat the cycle regularly and indefinitely, but thus far, in most instances, none of the experimental procedures or theories has indicated the underlying cause or significantly influenced their behavior. They may be unrelated medical curiosities, or more probably, some or all of them may have a common underlying basis to weld them as a syndrome of periodic disease with different manifestations. It is important to know that such benign periodic conditions exist in order to protect the victims from unnecessary diagnostic expense and discomfort and from the hazards of unnecessary therapeutic and surgical procedures.

A curious fact emerged after the accompanying table was prepared grouping my own cases with those of others; namely, that in each case the periodicity in

19a. Ask-Upmark, E.: On Periodic Fever, *Acta Soc. med. suecanae*, 1938, pp. 1-93.

20. Tocantins, L. M.: Seasonal Variations in the Number of Platelets in Arterial, Venous and Cutaneous Blood of Man, *Am. J. Physiol.* **119**: 439-444 (July) 1937.

21. (a) Thompson.¹² (b) Jackson, H.; Merrill, D., and Duane, M.: Agranulocytic Angina Associated with the Menstrual Cycle, *New England J. Med.* **210**: 175-176 (Jan. 25) 1934. (c) Stephens, D. J., and Lawrence, J. S.: Cyclical Agranulocytic Angina, *Ann. Int. Med.* **9**: 31-37 (July) 1935.

22. Bensaude, R., and Rivet, L.: Les formes chroniques du purpura hemorrhagique; poussées indéfinies et réveils à longs intervalles; rapports de certains cas avec la tuberculose, *Arch. gén. de méd.* **1**: 193-216, 1905. Pohle, F. J.: The Blood Platelet Count in Relation to the Menstrual Cycle in Normal Women, *Am. J. M. Sc.* **197**: 40-47 (Jan.) 1939.

23. Periodic Swelling of Breast in Men, *Queries and Minor Notes*, *J. A. M. A.* **133**: 146 (Jan. 11) 1947.

24. Cooke,⁴ Scott and Kirshner.²⁰ Cromoc.¹¹ Siegal.^{8a}

25. Sison, A. B. M., and others: Allergic Peritonitis: Report of a Case, *J. A. M. A.* **134**: 1007-1010 (July 19) 1947.

26. (a) Wolf and Wolff.⁷ (b) Rutledge, Hansen-Prüss and Thayer.¹¹ (c) Demmer.¹⁰ (d) Dunbar, H. F.: Emotions and Bodily Changes, New York, Columbia University Press, 1938. (e) Santos, R. N.: Ueber die Neuropsychogene Hyperthermie, *Med. Klin.* **27**: 1273, 1931.

27. Alt and Barker.⁵ Wolf and Wolff.⁷ Siegal.^{8a}

28. Janeway and Mosenthal.³ Leale.¹⁰ Reznikoff.¹⁵

days is about 7 or multiples of 7. The same is reported in intermittent arthralgia,¹⁷ in Siegal's^{2a} tables and is shown in many of Ask-Upmark's^{19a} charts. Some, so inclined, may attach mystic significance to this, particularly in respect to the age-old importance associated with the numeral 7 and of the numerous allusions to it.²⁰ It was suggested that a latent or overt cyclic rhythm of this duration in mankind led to the establishment of the seven day week not on an astrologic or religious basis, but as the projection of a physiologic periodicity.³⁰ Whatever interpretation or explanation one wishes to make, the periodicity in the cases described seems to be too consistent to be fortuitous. It may be fantastic to cast about for some possible bearing of extrinsic cycles on the conditions described except to mention them. The rhythm of the days, the weather, the seasons and the sun spots are a few,³¹ but the lunar cycle lasts about twenty-nine days and

Special Article

LYMPHOMAS AND LEUKEMIAS

The Value of Early Diagnosis and Treatment

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New York

This article is the seventh of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment. When complete, the series will be published in book form by the W. B. Saunders Company under the sponsorship of the American Medical Association and the American Cancer Society.

There is at present a large hiatus in diagnosis of cancer. On the one hand, persons who presume that they are well flock to the so-called cancer prevention clinics where, despite the expenditure of considerable time, effort and money, relatively few cancers are found. On the other hand, the clientele of the centers for treatment of cancer is mostly made up of patients who have well established malignant neoplasms. Analysis of the reasons for delay in treatment of the latter group discloses that a large share of the responsibility for delay continues to rest on the first physicians consulted by the patients having cancer and that it is questionable whether since 1938¹ the physician's relative share of the responsibility has been reduced.²

This diagnostic hiatus which exists for cancer in general seems to be particularly noticeable in the lymphoma-leukemia field. Few lymphomas or leukemias are found in a cancer prevention clinic that limits its examinations to those who are unaware of the existence of a condition suspected of being a neoplasm. Yet those who apply for treatment of a lymphoma or leukemia have, for the most part, a well established disease process.

The reasons for the diagnostic hiatus in the lymphoma-leukemia field appear to be mainly the following two: (1) failure on the part of the practitioner to recognize the significance of early signs and symptoms and (2) failure on the part of the practitioner to be aware of or to accept the value of early treatment. Unfortunately the assumption of lack of value of early treatment has been unjustifiably bolstered by the dicta of some who should be in a position to give better advice. In this argument it must be admitted at once that no case of leukemia, acute or chronic, is curable by any method known today, and, further, that it is doubtful that any one is in a position to authenticate a claim to have cured any case of Hodgkin's disease, lymphosarcoma or mycosis fungoides up to the present time. Nevertheless, leaving the acute leukemias and certain rapidly aggressive lymphomas out of the discussion, it is certain that many cases of chronic leukemia can be markedly palliated by one means or another, that promises of curability of some early cases of Hodgkin's disease and lymphosarcoma are evident in any large series and that in general early diagnosis and sufficient well

Cases of Periodic Disease

	Sex	Age at Onset	Duration, Years	Periodicity, Days
Fever				
Case 1.....	F	38	11	17-22
Case 2.....	M	18	10	7
Case 3.....	M	34	3	14-28
Janeway ²	F	2 weeks	24	7
Joshia in discussion on Janeway and Mosenthal ³	F	Said to be similar to case above		
Alt ⁴	M	4	13.	6-8, later 3-4
	M	Said to be similar to case above		
Scott ⁶	M	31	14*	2-3
Wolf ⁷	M	31	12	7
	M	25	16	"Every few weeks"
Neutropenia				
Case 4.....	M	18	2	20-22
Rutledge ¹¹	M	1	53*	21
Donn ¹²	F	?	16*	18-21
Reznikoff ¹⁵	M	1	18	21
Hydrarthrosis				
Case 5.....	F	29	3	14
Thrombopenia				
Denmer ¹⁰	M	55	6	28
Myasthenia				
Case 6.....	M	62	2	14-21
Swelling of breast ²³	M	?	?	28-56

* Follow-up report.

solar radiation has a regular periodicity of 6.6 days.^{32a} Adverse comment on the wisdom of such associations is made elsewhere.^{32a}

SUMMARY

Six cases of regularly periodic diseases have been studied; 3 characterized by fever and abdominal pain and 1 each by neutropenia, arthralgia and myasthenia. They are compared with other similar and different reported conditions, some synchronous with menstruation and others not. Most of them recur independently of any known natural rhythmic fluctuation and probably signify some obscure intrinsic cycle in both sexes. They may be a collection of unrelated medical curiosities, but if a common underlying cause can be discovered some or all of them may be grouped as a syndrome of periodic disease with different manifestations.

29. (a) Seven, in Century Dictionary: An Encyclopedic Lexicon of the English Language, New York, The Century Company, 1911, vol. 8, p. 5530. (b) Evans, B.: The Natural History of Nonsense, New York, Alfred A. Knopf, 1946, p. 6.
30. Swoboda, H.: Das Siebenjahr. Untersuchungen über die zeitliche Gesetzmässigkeit des Menschenlebens, Vienna, Orion Verlag, 1917, p. 159.
31. Cycles, Life 21: 71-74 (Oct. 14) 1946.
32. Abbot, C. G.: The Sun a Regular Variable Star, Science 105: 632 (June 20) 1947.
32a. Evans,^{29b} pp. 124-125.

From Memorial Hospital for the Treatment of Cancer and Allied Diseases.

1. Pack, G. T., and Gallo, J. S.: Culpability for Delay in the Treatment of Cancer, Am. J. Cancer 33: 443-462 (July) 1938.
2. Leach, J. E., and Robbins, G. F.: Delay in the Diagnosis of Cancer, J. A. M. A. 135: 5-8 (Sept. 6) 1947.

conceived early treatment of the chronic lymphomas will spell at least far superior results in terms of long control.

The possibility of curability of early Hodgkin's disease or lymphosarcoma depends primarily on whether these processes are of unicentric origin. Were they all of multicentric origin, naturally any treatment known today could be only palliative. If any of them arise, like carcinoma, in one focus, and spread only from that focus, then by eradication of the initial lesion or eradication of the disease while it remains confined to one region cure should be at least theoretically possible. The evidence for such a possibility is accumulating.

It has long been my experience, for example, in Hodgkin's disease, that outstanding among those cases with long survivals and long periods of freedom from disease are those in which the disease has been treated fairly aggressively while it is still early and localized. In particular have been noted those cases in which a single small node group, especially in the upper cervical region, has been excised surgically, the diagnosis has then been discovered on microscopic examination of the excised nodes, and then fairly aggressive irradiation has been promptly used over the operative field. Such observations are supported by further analysis of the patients treated at Memorial Hospital and by reports in the literature of the past decade. From Memorial Hospital Slaughter and Craver³ in 1942 reported 5 cases of Hodgkin's disease in which treatment was by surgical removal of the only nodal mass found, followed by local roentgen irradiation, with subsequent survival from five to eleven years. They referred to a report by Baker and Mann of England of two apparent cures of unilateral cervical Hodgkin's disease following surgical excision of all diseased tissue and postoperative roentgen therapy, the cures having lasted ten and twelve years, respectively. They referred also to 9 cases in the literature of gastric Hodgkin's disease treated by partial gastric resection. One patient had been well for four years and 1 for five years. In addition they referred to 1 case in the literature of resection of ileal Hodgkin's disease, with freedom of evidence of disease for five years before a recurrence was found in the small intestine.

An analysis of 196 cases of lymphosarcoma treated at Memorial Hospital, published in 1940 by Sugarbaker and Craver,⁴ indicated the possibility of improved results for localized lymphosarcoma by means of extirpative surgical procedures followed by local irradiation. They stated:

Twenty-five determinate patients were subjected to some extirpative surgical procedure: removal of an extranodal primary site (such as tonsil, breast or ileum) in eleven; node dissection in twelve, and removal of both an extranodal primary and an adjacent involved node group in two. With all but a few of these patients surgical treatment was shortly followed by local external irradiation given prophylactically. Of these patients 6 (24 per cent) are living five or more years later and all are apparently cured. A group of 62 patients on admission were considered to have a comparable amount of clinical disease, though in some instances not as anatomically accessible, and were treated by some form of radiation. Of these 16 per cent survived five years but only 8 per cent are apparently cured. The small size of these two groups prohibits any definite conclusions but certainly encourages further trial of a combined surgical and radiologic approach in these early cases.

As pointed out by Slaughter and Craver, if irradiation is used for early localized cases, in doses sufficient to be truly obliterative of the disease, the late result may in some cases be far worse than from a healed surgical wound, and, it may be added, worse than the late effects of local surgery followed by moderately heavy postoperative irradiation.

On the other hand, in recent years I have been somewhat disappointed at the early recurrences in some cases in which surgical treatment has been selected as the first mode of attack on localized Hodgkin's disease and lymphosarcoma. While on the one hand in some of these cases the disease has been deemed pre-operatively to be near the borderline of suitability for complete surgical removal and thus may have been too widespread to justify surgical removal, on the other hand consideration of the cellular nature of these lymphomatous processes and their proneness to early spread by way of the lymphatics naturally raises the question whether chances for cure might not after all have been enhanced by an immediate resort to heavy roentgen therapy, accepting its undesirable late effects of fibrosis, telangiectasis and radiation dermatitis.

At any rate, the principle seems sound that early localized Hodgkin's disease or lymphosarcoma offers the distinct possibility of better prognosis and perhaps even cure if treated adequately. I most decidedly do not agree with advocates of "the smallest quantity of irradiation that will effect resolution of the gross disease."⁵

TABLE 1.—Five Year Survivals in Lymphosarcoma

Stout (All Cases) ⁵	Craver (All Cases) ⁷	Catlin (Cases Involving Head and Neck) ⁶
23%	26.3%	52%

Catlin,⁶ analyzing 50 determinate cases of lymphosarcoma of the head and neck, treated at Memorial Hospital, found that the five year survival rate was 52 per cent, or double the rate for lymphosarcoma of all types as reported by me,⁷ 26.3 per cent, and as reported by Stout,⁵ 23 per cent. Twenty of Catlin's 50 lymphosarcomas of the head and neck arose in the tonsil and 11 in the "soft parts of the head and neck, including the nodes." The rest of the lymphosarcomas were distributed among various sites; namely, the nasal cavity, nasopharynx, paranasal sinuses, palate, orbit, tongue, gingiva and pharynx.

Table 1 summarizes the five year survival in Catlin's group of lymphosarcomas of the head and neck compared with the figures of Craver and those of Stout for the five year survival in all cases of lymphosarcoma.

Gall⁹ in 1943 published from the Massachusetts General Hospital a study of 48 cases of malignant lymphoma in which at an early operation the surgeon had been satisfied that he had removed all visible and palpable disease. Of 19 patients alive at the time of his report only 1 had shown evidence of malignant lymphoma at the time of the last examination, while the other 18 had been free of evidence of disease for at least three years. Despite several postoperative deaths, the average postoperative duration of Gall's

5. Goldman, L. B., and Victor, A. W.: Hodgkin's Disease, New York State J. Med. 45: 1313-1318 (June 15) 1945.

6. Catlin, D.: Lymphosarcoma of the Head and Neck, Am. J. Roentgenol., to be published.

7. Craver, L. F.: Lymphomas and Leukemias, Bull. New York Acad. Med. 23: 79-100 (Feb.) 1947.

8. Stout, A. P.: The Results of Treatment of Lymphosarcoma, New York State J. Med. 47: 158-164 (Jan.) 1947.

9. Gall, E. A.: The Surgical Treatment of Malignant Lymphoma, Ann. Surg. 118: 1064-1070 (Dec.) 1943.

3. Slaughter, D. P., and Craver, L. F.: Hodgkin's Disease: Five Year Survival Rate; Value of Early Surgical Treatment; Notes on Four Cases of Long Duration, Am. J. Roentgenol. 47: 596-606 (April) 1942.

4. Sugarbaker, E. D., and Craver, L. F.: Lymphosarcoma: Study of One Hundred and Ninety-Six Cases with Biopsy, J. A. M. A. 115: 17-23 (July 6); 112-117 (July 13) 1940.

surgical group was five and two-tenths years, and the average total duration was six and nine-tenths years. These figures were, respectively, two and almost three times better than for cases in which treatment was by irradiation alone. (It should be pointed out here, however, that it may well be assumed that the cases selected as suitable for surgical procedures were by and large more favorable than those assigned to irradiation alone.)

Table 2 is a reproduction of Gall's table⁹ of the comparison of radical surgery with roentgen irradiation with respect to the survival of patients with malignant lymphoma.

More recently Hellwig¹⁰ reviewed 234 cases of malignant lymphoma treated from January 1925 to December 1945, and analyzed 130 cases with respect to the value of radical surgical procedures plus irradiation in selected cases.

TABLE 2.—Effect on Survival (Radical Surgery Versus Roentgenotherapy)

Type	Number of Cases	Range of Survival, Years	Median of Surgical Group, Years	Median of X-Ray Group, Years
Lymphoblastic lymphoma.....	5	0.2-2.5	0.2	0.6
Hodgkin's sarcoma.....	2	0.0-0.2	0.2	0.0
Stem cell lymphoma.....	9	0.0-15.3	5.0	1.1
Plasmacytoid lymphoma.....	11	0.2-6.5	4.9	1.1
Lymphocytic lymphoma.....	9	0.0-10.0	5.5	2.4
Hodgkin's lymphoma.....	9	0.0-19.0	5.4	3.2
Follicular lymphoma.....	3	1.5-8.5	7.5	6.0

TABLE 3.—Five Year Survivals After Radical Surgery

Classification	Number of Cases	Duration of Survival, Years		Dead
		Living and Well	Living with Disease	
	2	20-30	0	0
	1	6	0	0
	4	14-13-9	0	10
Lymphoblastoma.....	6	12-7-7-7	0	7-4 11/12
Lymphocytoma.....	15	15-12-11-8-8-7	0	5
		7-7-6 6-5-5-5		(coronary)
Follicular lymphoma.....	1	0	0	5 8/12
Plasmacytoma.....	1	6	0	0
Total.....	30			

Table 3 shows Hellwig's figures¹⁰ for five year survivals in 30 cases in which this treatment was used.

The longest duration noted by Hellwig was twenty years, following removal of a reticulocytoma of the tonsil.

Holmes and Schultz¹¹ reported from Massachusetts General Hospital on the radiation treatment of localized malignant lymphoma. They reviewed 500 cases, collecting those in which the patients were alive and apparently free of evidence of malignant lymphoma over five years following the last treatment, and in which the disease had been localized and had been treated only by irradiation. They found 15 such cases, the survivals in which ranged from five and eight-twelfths years to twenty-five and five-twelfths years.

Merner and Stenstrom¹² reported improved survival rates in Hodgkin's disease as a result of improved technics of irradiation.

10. Hellwig, C. A.: Malignant Lymphoma: The Value of Radical Surgery in Selected Cases, Surg., Gynec. & Obst. 84: 950-958 (May) 1947.

11. Holmes, G. W., and Schultz, M. D.: Radiation Treatment of Localized Malignant Lymphoma, New England J. Med. 235: 789-791 (Nov. 28) 1946.

12. Merner, T. B., and Stenstrom, K. W.: Roentgen Therapy in Hodgkin's Disease, Staff Meet., Bull. Univ. Minnesota 17: 262-277 (March 15) 1947.

Clearly, then, there does exist a promise of curability of early Hodgkin's disease and lymphosarcoma, provided treatment is sufficiently aggressive. It seems clear also that improved palliative results, in terms of relief of symptoms, duration of remissions and total length of survival, are obtainable by means of close follow-up for detection of lesions, whether obvious or obscure, and by means of well planned precise irradiation.⁷

For chronic leukemia in many cases a great deal can be accomplished in a palliative way by judicious irradiation, even though under present conditions one must accept incurability as the first premise.

For the acute leukemias and the relatively rare cases of rapidly progressive Hodgkin's disease and lymphosarcoma unfortunately at present there is little to offer that can produce more than fleeting benefit, although one may hope that further research in chemotherapy with newer nitrogen mustards or other compounds, or in application of radioactive isotopes, or perhaps in hormone therapy or some combination of such agents, may some day enable better control of these acute processes.

It is evident that, as in all cancer, hope for better control of lymphomas and leukemias rests on early diagnosis. In this field there are unique difficulties, familiar especially to pathologists and hematologists. How often the early biopsies in cases of Hodgkin's disease or lymphosarcoma fail to reveal the diagnosis and how often the early blood counts in cases of leukemia do not seem leukemic are only too well known to pathologists, hematologists and those clinicians who have extensive experience with these diseases. Nevertheless there are still far too many cases going undiagnosed far beyond the time when they could be diagnosed, and many of these are therefore being allowed to pass beyond the stage of possibility of cure or marked benefit.

Early diagnosis cannot wait for development of typical textbook symptoms and signs. Every early case may be said to be atypical in the textbook sense. This discussion therefore will avoid descriptions of typical fully developed cases, and will rather indicate certain of the more important early clues to diagnosis.

SOME EARLY SIGNS OF LYMPHOMAS AND LEUKEMIAS

Many patients later found to have Hodgkin's disease or lymphosarcoma give a history of having been reassured by the first physician consulted regarding an enlarged lymph node. It cannot be too strongly emphasized that any enlarged lymph node demands an immediate investigation. Entirely too frequent is the story of an enlarged node in the neck being passed off as the result of a cold or sore throat. Any supposedly inflammatory enlarged node that does not subside within three weeks should be regarded as a danger signal demanding complete investigation. Such investigation should include competent examination of the drainage territory of the node (for example, search of the nasopharynx, tonsil and adjacent areas for a possible primary lymphosarcoma in the case of an enlarged node in the upper cervical region), biopsy of the primary lesion if one is found, biopsy of the node if no primary lesion is found, a careful blood cell count and, of course, a complete physical examination for enlargements of other lymph nodes or of the spleen or liver. If, as often happens in early Hodgkin's disease or lymphosarcoma, no evidence of disease is found

except the enlarged node, which is reported after biopsy as chronic lymphadenitis or at any rate as failing to show evidence of any definite pathologic entity, and if then other nodes appear near the site of the originally enlarged one, there should not be undue delay before biopsy is made of another node which seems on palpation to be representative of something abnormal.

Nodes in the thyroid region are often mistaken for goiter. Careful palpation will usually differentiate between a goiter and enlargement of lymph nodes at the base of the neck.

Cough, substernal pressure, fulness at the base of the neck and puffiness of the eyes on arising, wheezing and dyspnea are symptoms any or all of which should indicate the need for a competent straight postero-anterior and straight lateral roentgenogram of the chest and, if necessary, oblique roentgenograms and tomograms to exclude a mediastinal tumor, which might be Hodgkin's disease or lymphosarcoma, among other possibilities. In such cases significant nodes lying at the base of the neck, especially between the two lower insertions of the sternocleidomastoid muscle, are often overlooked because of failure of careful palpation with a light pressure. A gentle palpation with moistened fingers may disclose a node that was missed by rough palpation.

Lymphosarcoma of the tonsil is often overlooked for a long time. Any peculiar irregularity or firm rubbery part of a tonsil should be regarded with suspicion. Lymphosarcoma of the tonsil seldom ulcerates in an early stage. It would be a good policy to have all tonsils that are removed, especially from patients beyond the age of puberty, subjected to examination by a pathologist.

A solitary lump in a woman's breast may not be a cyst, fibroadenoma or mammary carcinoma, but may be the initial manifestation of lymphosarcoma.

In the skin, especially of the scalp, a slightly thickened pink or purplish plaque may be the first evidence of lymphosarcoma. Some of these cutaneous lymphosarcomas can be kept under control for years by irradiation, while others rapidly generalize and prove to be aggressive rapidly fatal processes.

A thickening in and about the lacrimal gland or the conjunctiva, even though reported on biopsy or surgical removal as a benign orbital lymphoma, may in from a few months to a few years be found to have been the first indication of a generalizing form of lymphosarcoma.

A change in bowel habit or other gastrointestinal symptoms may be the first sign of a localized lymphosarcoma or Hodgkin's disease of the alimentary tube, and some of these have been successfully removed surgically or caused to regress by radiation, with subsequent long survival.

Localized reticulum cell sarcoma of bone responds well to adequate irradiation; hence symptoms referable to a bone call for roentgenographic study, and if such study reveals a bone lesion biopsy should be done.

The differential white blood cell count may be the first indication of leukemia.

Chronic lymphatic leukemia may produce, as its first manifestation, any of the findings just described as suggestive of Hodgkin's disease or lymphosarcoma. Therefore it is necessary to look at the patient as a whole in considering the differential diagnosis, looking for abnormalities in all the lymph node-bearing areas, for enlargement of the spleen and liver, for changes in the blood count and, if it seems indicated, for

changes in the marrow. What seems on biopsy to be lymphosarcoma may prove to be part of a leukemic process, either then or later.

In addition there are certain other symptoms and signs that may suggest leukemia.

In chronic myeloid leukemia the patient may carry a large spleen for some months without being aware of its presence, but aware only that he has "indigestion," i. e. distress in the upper part of the abdomen.

The leukemic patient commonly has had a tendency to have black and blue marks on slight bruising for many years. His gums may bleed readily, and sometimes the first alarming symptom is prolonged bleeding after extraction of a tooth or after tonsillectomy. Routine blood cell counts preceding tonsillectomy do not rule out the possibility of leukemia, and any history of easy bruising or other bleeding tendency and of fatigue or pallor should indicate the need for more detailed hematologic investigation before tonsillectomy is done. Anemia, an enlarged spleen and what might be considered a low grade leukemic blood cell count—for example, 20,000 white blood cells with a few myelocytes—should particularly raise suspicion of osteosclerotic anemia or leukoerythroblastic anemia, and there should be further investigation by means of roentgenograms of pelvis and long bones, search for a marrow-invading tumor process and sternal marrow biopsy before the diagnosis of leukemia is accepted. In such cases the enlarged spleen may be regarded as a protective mechanism, caused by the need for extramedullary hemopoiesis resulting from replacement of the bone marrow by osteosclerosis or metastatic tumor.

PREVENTION

No extensive fund of knowledge exists regarding prevention of lymphomas and leukemias. There are a few facts and some impressions that may be reviewed.

Exposure to such solvents as benzene may produce leukemia, or in fact almost any sort of derangement of the hemopoietic system. Cases of lymphosarcoma and Hodgkin's disease have been seen in which there has been a long history of exposure to solvents.

It seems fairly clear that repeated exposure to radiation such as roentgen rays and gamma rays of radium may lead to the development of leukemia.

In children with acute leukemia it is so common nowadays to obtain a history of repeated use of sulfonamide drugs for minor infections of the respiratory tract that, with the knowledge of their ability to derange the hemopoietic system and despite the lack of proof that acute leukemia is of any more frequent occurrence now than before the advent of sulfonamide drugs, it is difficult to avoid speculation regarding the individual cases as to whether the sulfonamide compound may have been responsible.

In Hodgkin's disease it may commonly be noted that onset and exacerbations seem associated with the common cold. In some cases of lymphosarcoma of the pharynx and cervical nodes there is a history of repeated or chronic infection of the upper respiratory tract. In some other cases of lymphosarcoma there has been a history of infection in the drainage territory of the nodes initially attacked by lymphosarcoma.

Inquiry into the contact history of patients with Hodgkin's disease will disclose not a few who have had rather close association with a case of active tuberculosis within a few years of the onset of Hodgkin's disease.

At Memorial Hospital in the past few years my colleagues and I have seen several cases presenting

evidence suggesting transitions between Boeck's sarcoïd and Hodgkin's disease or lymphosarcoma.

Allergic manifestations are frequent in Hodgkin's disease. There is in many such cases a history of allergy for years prior to the apparent onset of the Hodgkin process. Some cases have been observed in which Hodgkin's disease became evident not long after a series of inoculations of some sort, as for hay fever. To these observations may be added the frequency of urticaria in the early stages of Hodgkin's disease, the itching and rashes so common in these cases and the eosinophilia so characteristic of the histology of Hodgkin's nodes.

When one commonly finds that 2 siblings have chronic lymphatic leukemia or when one obtains histologic proof that 3 siblings have died of Hodgkin's disease, one is naturally inclined to place some credence in heredity of these diseases.

In adults one gains the impression that chronic lymphatic leukemia and lymphosarcoma seem in many cases to arise at the time of the female or male climacteric.

It seems best merely to state these observations, without attempting therefrom to formulate any set of rules for prevention of lymphomas or leukemias.

METHODS OF TREATMENT

Chemotherapy in the form of nitrogen mustards and irradiation of the whole body by the internal method available from such radioactive isotopes as those of phosphorus, sodium, manganese or gold have been so publicized that many lay persons and some practitioners have gained the impression that these agents afford the methods of choice in the treatment of lymphomas and leukemias. It should be emphasized that up to now these agents have afforded only palliative effects.

Nitrogen mustards, of which the one most commonly used is the compound methyl-bis (2-chloroethyl) amine hydrochloride, are useful for palliative effects particularly in generalized Hodgkin's disease, to a less extent in generalized lymphosarcoma and in lympholeukosarcoma and to a considerably less extent in chronic leukemia.

Some of the newer nitrogen mustards have shown transitory beneficial effects in acute leukemia. Even in the best field so far found for nitrogen mustard therapy, that is, in Hodgkin's disease, while the remissions may be striking, they are unfortunately disappointingly brief in many instances.

It is clear that these toxic constitutional agents have little or no place in the treatment of early localized Hodgkin's disease or lymphosarcoma. For such cases adequate local roentgen therapy remains the treatment of choice, except perhaps in those cases that would lend themselves to radical surgical procedures, which should probably be followed by moderately heavy local postoperative roentgen therapy.

It is often asked what dose of roentgen rays constitutes adequate treatment of a localized lymphoma. That dose has not been defined. One thing that is certain is that it is nearly always far more than just enough to cause regression. It probably should be about the maximum dose that can be tolerated by the skin overlying the disease, and probably should be given in fractional increments. What fraction of the total dose each increment should be quite possibly varies from case to case, depending on various factors such as size of field and radiosensitivity of the disease in each particular case. Currently in a case of unilateral

involvement of cervical lymph nodes we apply at Memorial Hospital 200 r of 250 kilovolt roentgen therapy at 50 cm. target-skin distance, filtered through 1.5 mm. of copper, every second day to a total of 2,000 to 2,400 r, measured in air. Perhaps this dose should be increased in those cases in which, by the time it has been administered, there is still no evidence of spread of the disease to other regions.

In localized lymphosarcoma of an external node group, as in the femoral triangle, we give 300 r with the same factors as those just mentioned, every second day to a total of 2,400 r to 3,000 r measured in air, and perhaps should give more. Some cases do show local recurrence following these doses.

Review of cases in which treatment was by total body external irradiation at extremely low intensity (0.8 to 1.6 r per hour for twelve to eighteen hours a day) strongly suggests that a moderate dose, 75 to 125 r measured in air, of whole body irradiation following the local irradiation will unpredictably in some cases of Hodgkin's disease or lymphosarcoma confer a longer freedom from relapse than would have been expected, but the unpredictability of this result and the deleterious effects in some cases are deterrents to routine application of this method.

Even when Hodgkin's disease or lymphosarcoma begins to generalize, by and large roentgen irradiation is a more effective agent than any of the nitrogen mustards that have been tried up to the present. As stated before, the chief usefulness of the nitrogen mustards available now has been for palliation in the generalized cases, and that palliation is often of too brief duration.

The radioactive isotopes of phosphorus and sodium may palliate chronic leukemia, but are of relatively less effect in lymphosarcoma and seldom of any great benefit in Hodgkin's disease.

Urethane may produce remission of chronic leukemia, usually only after administration for a few to several weeks, and in only about one fourth to one third of the cases.

Leukemia is so variable a disease that it is impossible to formulate a general plan of treatment.

The typical case of chronic myeloid leukemia, presenting a blood and marrow picture in conformity with that diagnosis and showing on physical examination essentially no other abnormality than an enlarged spleen, will usually do well following irradiation of the spleen with three or four times 100 r anteriorly and posteriorly (250 kilovolts, 70 cm. distance, filtered through 1.5 mm. of copper).

In the typical case of chronic lymphatic leukemia presenting a blood and marrow picture in conformity and moderate enlargement of external lymph nodes, together with moderate splenohepatomegaly, there may be considerable benefit from a course of 200 r to 300 r once around to each of the external lymph node-bearing regions.

Beyond these sketchy statements concerning the early radiation therapy of chronic leukemia it seems outside the scope of this article to venture. Many exceptions occur. Cases of chronic myeloid leukemia are seen showing no enlargement of the spleen, and there are cases of chronic lymphatic leukemia with no perceptible lymphadenopathy or ~~hepatomegaly~~. Some patients with chronic leukemia ~~may~~ ^{may} ~~be~~ ^{case} reasonably well without treatment for some months or years. Every case calls for individualization.

In summary, all treatment known for leukemia today is at best merely palliative, but early diagnosis, close

observation and the exercise of good judgment in applying available means of treatment or, in some instances, withholding specific treatment, depending on the individual circumstances, may spell markedly improved palliation. The special pleas of this article are (1) for recognition of the possibility of better control of Hodgkin's disease and lymphosarcoma that can result from early diagnosis, adequate early therapy and close follow-up for detection of lesions so as to permit prompt application of appropriate therapy and (2) for recognition of the evidence presented from various sources that some cases, at least, of Hodgkin's disease and lymphosarcoma seem to be of unicentric origin and therefore should be curable if recognized and adequately treated in their earliest stage.

Clinical Notes, Suggestions and New Instruments

TREATMENT OF TUBERCULOUS ULCER OF THE TONGUE WITH STREPTOMYCIN

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Lingual tuberculosis is not frequent.¹ Up to 1945 there were only slightly more than 400 reported cases,² of which the largest number were found in patients over 40 years of age. Of this group a preponderance were found in the fifth decade.^{1b} Males are more often affected than females, and Negroes infrequently. The infrequency of tuberculous ulcers of the tongue may be due to the vascularity of the organ, constant mechanical action of the tongue, possible germicidal action of the glandular secretions,^{1a} and the general resistance of striated muscle to bacterial invasion.²

Tuberculosis of the tongue is caused by the lodgment of tubercle bacilli in the tissue of the tongue and their subsequent proliferation. Theoretically the bacilli may reach the tongue by hematogenous spread, lymphatic spread, direct extension or actual contact. Primary tuberculosis of the tongue if existing is rare.^{1a} It is usually secondary to tuberculosis in other parts of the body, generally the lungs.

In order of frequency tuberculous ulcers of the tongue have been reported³ on the following sites: edge, base, tip and dorsum of the tongue. Valtan⁴ found the dorsum of the tongue the most commonly affected surface.

Titcher² listed five types of tuberculosis of the tongue: (1) ulcer, (2) fissure, (3) granulomas, (4) tuberculomas and (5) glossitis, with the tuberculous ulcer most common. The granulomas are vascular nodular elevations, soft or hard in consistency. The tuberculomas are painless nodules in the deeper tissues.⁴ The typical ulcer has sinuous, undermined edges,^{3b} is of irregular outline and is covered with a grayish exudate.^{4a} It lacks the induration of a cancerous lesion.⁵ Histologically it is always characterized, no matter what its final

physical configuration may be, with the usual central caseation, the occurrence of giant cells, connective tissue proliferation, with at times round cell infiltration, and occasionally formation of abscess.^{3b} These ulcers must be differentiated from syphilitic ulcers, carcinomatous ulcers and traumatic ulcers.⁶ Pathologic examination and serologic tests are necessary for differentiation.

The use of streptomycin for the treatment of tuberculous ulcer of the tongue was prompted by the favorable response in other selected cases of tuberculous infections to the use of this substance.⁷

REPORT OF CASE

The patient was a white man aged 49 who was admitted to the hospital March 10, 1947 because of a recalcitrant ulcer of the tongue. He remembered sticking his tongue with a fish bone about the third week in July 1946. The following day a bleb appeared at the traumatized site which soon ruptured. This was followed by an open wound which became progressively larger. There was not much pain associated with the lesion at this time. A biopsy as performed about a month



Fig. 1.—Photomicrograph of base of ulcer.

later; an ulceration of the tongue was reported favoring a diagnosis of tuberculosis. The blood Mazzini reaction was negative for syphilis and there was no evidence of carcinoma. He was then treated with a white pastelike substance the nature of which is unknown. The lesion became progressively larger and more painful until his present hospital admission.

The patient first became aware that he had pulmonary tuberculosis in 1931, at which time there were diagnostic roentgenologic findings and a positive sputum. He was hospitalized for the first six months in 1940. He states that he had a 'great

From the Medical Service of Henry Wolfer, M.D., Kings County Hospital.

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deal of hoarseness at this time, but the hospital records reveal evidence of an active tuberculous process in his lungs and at no other site. All examinations of his sputum indicated the presence of acid-fast bacilli during this period.

On admission a general physical examination of the patient revealed nothing significant aside from widespread crepitant rales throughout both pulmonary fields and the lingual abnormalities. There was an ulcerative lesion situated on the central portion of the dorsum of the tongue 1 cm. wide and 1.5 cm. long of an elliptic configuration. The edges were ragged and overlapping and there were papillomatous excrescences on the floor of the lesion, giving it a worm-eaten appearance. The lesion was filled with a dirty, yellowish gray exudate. There was excessive salivation. A roentgenogram of the thorax revealed bilateral, caseous pneumonic tuberculosis of both upper pulmonary fields with the presence of numerous cavities. Multiple examinations of the sputum indicated the presence of acid-fast bacilli. Wassermann examinations of the blood were negative in result on two occasions. A microscopic examination of excised sections of the ulcer revealed acute and chronic inflammatory tissue in multiple areas. In one section several giant cells with oval vesicular peripheral nuclei were seen. There were also tubercles which showed the presence of caseation. The histologic diagnosis was granuloma of the tongue, probably tuberculous (fig. 1).

On March 17, treatment with 1 Gm. of streptomycin was begun daily. It was given intramuscularly in eight divided



Fig. 2.—Gross appearance of ulcer. A, before therapy. B, after epithelization was complete.

doses at three hour intervals. In ten days a great improvement in the patient's appetite and sleeping habits and a definite feeling of well-being were noted. The edges of the ulcer appeared to be less ragged, the base appeared cleaner and some epithelization was seen. On March 30, the total daily dose of streptomycin was divided in nine parts. The additional fraction was used for local infiltration of the ulcer itself. With this new method of administering the antibiotic, further improvement in the appearance of the ulcer was not noticeable. Therefore on April 16 the original method of therapy was resumed and local infiltration was discontinued. After this change in treatment the lesion healed rapidly. By the first of June complete epithelization had taken place. A total of 75 Gm. of streptomycin had been given. The patient gained 8 pounds (3.6 Kg.) during the course of therapy. Roentgenograms of his thorax showed no change and his sputum remained positive for acid-fast bacilli. His course was followed by photographs taken March 13 and June 6 (fig. 2).

COMMENT

This is the first case of a tuberculous ulcer of the tongue treated with streptomycin to be reported in the literature.

We assume that streptomycin was responsible for the healing, since the lesion became progressively worse without any remissions prior to our treatment. We believe that the action of the drug was local, since the patient's sputum remained positive for acid-fast bacilli and roentgenograms of his chest during the course of treatment exhibited no changes.

The ulcer responded to the parenteral administration of streptomycin but not to its local infiltration. It is suggested that this was due to the granulomatous nature of the lesion.

SUMMARY

A case of tuberculous ulcer of the tongue successfully treated with streptomycin is reported.

175 Eastern Parkway (17).

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council recently published in *THE JOURNAL* (Nov. 15, 1947, p. 714) a report on Homologous Serum Jaundice. This statement was prepared by the Committee on Blood and Blood Derivatives of the Advisory Board on Health Services of the American National Red Cross. The chairman of this committee, Dr. Charles A. Jancway, has supplied to the Council additional information on human serum albumin. The data are so important that a résumé has been adopted by the Council for publication.

Salt-poor normal human serum albumin is now available in limited quantities only from one commercial source; it is necessarily expensive, because nearly four bleedings are needed to obtain 25 Gm. of albumin and because it is necessary to maintain blood collection stations, to pay donors and to meet high standards of processing on a relatively small scale. It seems probable that sufficient blood to meet the actual need and to provide such derivatives as serum albumin, antihemophilic globulin, fibrin film and immune serum globulin at reasonable cost can only be procured from volunteer donors. Public programs for the collection and processing of blood by cooperative effort between the Red Cross and the state department of health have already been set up in several states. In at least two of these, Massachusetts and Michigan, it is probable that serum albumin will be available to physicians in the not too distant future. The recent announcement by the American National Red Cross that it has adopted as one of its major objectives a national blood program, based on the collection of blood from volunteer donors and the distribution of blood and its derivatives without charge for the product to physicians of the United States and its territories, indicates that serum albumin will be more generally available in due time. However, this undertaking will probably require at least five years to become fully effective. Vice Admiral Ross T. McIntire, U.S.N., retired, former Surgeon General of the Navy, has agreed to serve as its administrator. As head of the medical department of the Navy during the war, he was closely associated with the development of the combined Red Cross-Army-Navy blood program. The American Red Cross has formed an Advisory Board on Health Services, consisting of over a hundred authorities in various phases of medicine, public health and allied fields. This board is organized in a series of committees, one of which is the Committee on Blood and Blood Derivatives.

Because there was no opportunity during the war to determine the value of human serum albumin in clinical conditions other than shock in which it might be expected to have some therapeutic effect, a limited supply of serum albumin has been salvaged from unsatisfactory lots of surplus dried plasma and distributed by the American Red Cross to a group of investigators in many of the country's leading medical centers for a variety of clinical investigations. It is expected that the report of this group, whose studies began only this spring, will ultimately be published and will answer many questions concerning the optimal uses of serum albumin in various branches of medicine.

The Council expresses its appreciation of the help provided by Dr. Jancway and the other members of the committee in supplying the data in the Council report.

AUSTIN SMITH, M.D., Secretary.

HUMAN SERUM ALBUMIN IN NEPHROSIS

Methods were developed during the war for separation of the various functional components of human plasma into fractions, in each of which specific activities are concentrated in stable and therapeutically useful form. This development was stimulated by the urgent need of the United States Navy for a safe and effective blood substitute, which would be less bulky to transport and more convenient to use than dried plasma under the difficulties that characterized many of the landing operations in the Pacific. The safety, ease of administration and range of effectiveness of serum albumin as a blood substitute in the treatment of shock following trauma, hemorrhage, operations and burns have been amply tested by clinical investigations in this country and by experience in the field. Likewise, the limitations of both plasma and serum albumin in comparison with whole blood are well recognized. If whole blood were to become increasingly available, the necessity for using substitutes (plasma or serum albumin) rather than blood itself in the resuscitation therapy of acute surgical and traumatic cases would diminish.

There are, however, other clinical conditions in which a solution rich in osmotically active protein and poor in sodium might be particularly useful. The original solution of normal human serum albumin, which was developed for the Navy, contained 25 per cent albumin in a diluent of sodium salts in twice isotonic concentration. The finding that the thermal stability of the solution could be definitely enhanced by using 0.04 molar acetyl tryptophane as the diluent made possible the development of salt-poor human serum albumin. One hundred cubic centimeters of this solution (25 Gm. of human serum albumin) contains approximately 0.35 to 0.4 Gm. of sodium as compared to 0.9 to 1.0 Gm. in the original solution and 2.1 Gm. in an osmotically equivalent amount (500 cc.) of citrated plasma. The stability of this material is such that it has been possible to heat the containers for ten hours at 60 C. as a final step in the process, a step which has been shown to inactivate a strain of the virus of homologous serum jaundice and which has made possible the omission of mercurial preservatives. Since no antibacterial agent is present, the solution in each container should be used on one occasion only.

A few preliminary clinical studies of the use of salt-poor normal human serum albumin in a small number of cases of hypoalbuminemia due to malnutrition, infection, chronic hepatitis, cirrhosis of the liver and the nephrotic syndrome have appeared in the literature. It is in those cases, particularly common in childhood, of intractable and massive edema associated with severe proteinuria due either to lipoid nephrosis or chronic glomerulonephritis that physicians, perhaps goaded by desperate parents, are most apt to turn to serum albumin as a last resort. This has been encouraged by at least one published report and by newspaper publicity.

There is no doubt that salt-poor human serum albumin is effective in relieving edema in a certain number of cases. In order to obtain such an effect large doses must be administered intravenously every day for considerable periods of time. In most cases, a large proportion of the injected albumin can be recovered in the urine and only a small proportion is retained, so that it is difficult to produce any substantial elevation of the concentration of serum albumin. Fear that such massive proteinuria may in itself lead to kidney damage has been expressed by certain workers, but definite evidence for or against this hypothesis has not been reported. The starting doses which have been suggested by those most familiar with the problem are roughly 12.5 Gm. daily in children under 3 years of age, 25 Gm. daily in children aged 3 to 12 years and 50 Gm. daily in adolescents and adults. If such a dose is not effective in several days, it may be increased by 50 to 100 per cent and continued for several days more. Albumin is preferably administered as 25 per cent solution at a rate sufficient to produce a considerable fall in hemoglobin concentration or hematocrit reading, indicating an increase in plasma volume due to the osmotic activity of the albumin. In patients with cardiovascular disease concentrated albumin should be administered cautiously, because the increased blood volume may possibly precipitate pulmonary edema. It should be stressed that there is no evidence yet to prove that serum albumin is more than a useful diuretic,

producing temporary relief from edema in these cases. The protection of these patients from the infections to which they are so susceptible and the provision of adequate calories and protein with an absolute minimum of salt are still the mainstays of treatment. Physicians should remember that this condition is extremely variable in its course, the edema often undergoing unexplained spontaneous remissions and exacerbations; its ultimate prognosis has improved considerably since the introduction of sulfonamide drugs and penicillin as therapy for the bacteremia and peritonitis which so often proved fatal in the past. It is to be hoped that the investigations now under way will ultimately provide clearcut evidence for the practitioner on the place of serum albumin in the treatment of patients with edema associated with renal disease.

REPORT OF THE COUNCIL

The Council has authorized publication of the following statements.

AUSTIN SMITH, M.D., *Secretary.*

STATICIN AND CARONAMIDE, PROTECTED AND GENERIC TERMS FOR 4'CARBOXY-PHENYL-METHANESULFONANILIDE

Sharp & Dohme, Inc., informed the Council that it had under clinical evaluation a new compound designated chemically as 4'carboxy-phenylmethanesulfonanilide and asked the Council to recognize protected and nonprotected names for the drug. After considerable correspondence with the firm, the designation "staticin" (suggested by the firm) was arrived at as the trade name and caronamide (also suggested by the firm) as the generic designation.

Subsequently the firm asked recognition of a trade name and generic name for a suspension of "staticin," suggesting "cremostaticin" as the protected name and caronamide suspension as the generic name. At that time the firm asked that the term "penalev" be recognized as an alternative designation for "staticin" in accordance with its policy of having a second or alternate trade name for its products. The Council found no objection to this designation.

The Council voted therefore to recognize "staticin" (stat'-i-cin) as the protected name and caronamide (ca-ron'-amide) as the generic name for 4'carboxy-phenylmethanesulfonanilide and to recognize "cremostaticin" (crem-o-stat'-i-cin) and caronamide suspension as protected and generic designations, respectively, for a suspension of the drug.

CHLORGUANIDE HYDROCHLORIDE, GENERIC TERM FOR CHLOROPHENYL ISOPROPYL BIGUANIDE HYDROCHLORIDE

The Council has considered the desirability of recognizing a brief generic term for the antimalarial compound, chlorophenyl isopropyl biguanide hydrochloride, known under a British trademark as "paludrine hydrochloride." As a result of its deliberations, the Council voted to recognize the term, chlorguanide hydrochloride, as the generic designation for this agent and further voted to recognize "paludrine hydrochloride" as the protected name provided it is so presented by any manufacturer.

ARSENAMIDE, GENERIC TERM FOR p-(bis-[carboxy-methylmercapto]-arsino)-benzamide

Attention of the Council was called to the desirability of recognition of an appropriate generic name for p-(bis-[carboxy-methylmercapto]-arsino)-benzamide. The term arsenamide was suggested by Drs. G. F. Otto and T. H. Maren of the Department of Parasitology, School of Hygiene and Public Health, and Department of Pharmacology and Experimental Therapeutics, School of Medicine, Johns Hopkins University, Baltimore. These investigators had studied the chemistry and compound. As a result of its consideration, the Council voted to recognize the term arsenamide (ar-sen'-am-ide) as the generic designation for p-(bis-[carboxy-methylmercapto]-arsino)-benzamide.

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SATURDAY, JANUARY 24, 1948

DEATHS OF PHYSICIANS IN 1947

THE JOURNAL during 1947 published the obituaries of 3,040 physicians as compared to 3,358 in 1946 and 2,962 in 1945. The American Medical Directory Report Service received during 1947 reports of deaths of 3,568 physicians in the United States and possessions, or 528 more than those published.

The average age of the 3,040 whose obituaries were published was 66.7 years as compared to 66.1 in 1946 and 65.3 in 1945. Four physicians died between the ages of 20 and 24, 65 between 30 and 34, 65 between 35 and 39, 75 between 40 and 44, 120 between 45 and 49, 170 between 50 and 54, 249 between 55 and 59, 321 between 60 and 64, 480 between 65 and 69, 548 between 70 and 74, 455 between 75 and 79, 252 between 80 and 84, 143 between 85 and 89, 58 between 90 and 94, 8 between 95 and 100 and 2 lived to be more than 100 years old. The number by age groups compares favorably with the previous year except in the 30 to 34 age group, where 43 were recorded during 1946 as compared to 65 during 1947.

Causes.—Both the primary causes of death and contributing factors are included in the following figures. Diseases of the heart continued as the leading cause of death among physicians, with a total of 1,406 recorded. Coronary embolism, thrombosis and occlusion led the heart group with 677 as compared to 738 for 1946; four of these were 30 to 34 years of age, 14 were 35 to 39, 16 were 40 to 44 and 28 were 45 to 49. In addition, angina pectoris and other coronary conditions were reported as causing 125 deaths, an increase of 19 over the previous year. An increase was shown for diseases of the myocardium and pericardium from 123 to 152 and for other diseases of the heart from 375 to 432. There was a notable decrease in chronic valvular disease and rheumatic heart disease from 28 in 1946 to 10 in 1947.

Cerebral hemorrhage, thrombosis and embolism took the lives of 384 physicians, pulmonary embolism 11 and other embolism and thrombosis 21. Arteriosclerosis caused 252 deaths, an increase of 67 over 1946. Hypertension, hypertensive cardiovascular disease and cardio-

renal disease contributed to 162 deaths, an increase of 71 over 1946. Aneurysm accounted for 20 deaths, and other diseases of the circulatory system for 16. Hodgkin's disease and leukemia caused 27 deaths, pernicious anemia 4 and other diseases of the blood 5.

Diseases of the respiratory system caused 168 deaths, of which 57 were due to bronchopneumonia, bronchiectasis or emphysema, 16 to hypostatic pneumonia, 13 to lobar pneumonia, 2 to atypical or virus pneumonia and 68 to pneumonia of unspecified type. Pulmonary tuberculosis caused 16 deaths, other types of tuberculosis 7, bronchitis and pleurisy 4 and asthma 2.

Of the 319 deaths attributed to cancer and tumors 100 were from cancer of the gastrointestinal tract, 61 from cancer of the genitourinary tract, 3 each from cancer of the brain and nervous system and cancer of the skin, 1 from cancer of the lip and 104 from cancer or tumor of unspecified organs; 10 of the deaths due to cancer were caused by lymphosarcomas. One physician in the 45 to 49 age group died of melanoma, 1 in the 65 to 69 group of cancer of the male breast and 3 of hypernephroma.

Of the total of 49 deaths from diseases of the nervous system, 11 were due to encephalitis, 10 to Parkinson's disease, 7 each to dementia paralytica and other diseases of the brain, 6 to other diseases of the spinal cord, 2 to meningitis and 1 to locomotor ataxia.

Diseases of the digestive system accounted for 132 deaths, of which 27 were due to cirrhosis of the liver, 15 to diseases of the gallbladder and bile ducts, 13 to peptic ulcer, 11 to peritonitis, 9 to other diseases of the liver, 7 to hernia, 4 to appendicitis and 46 to other diseases of the gastrointestinal tract.

Chronic nephritis or uremia was the commonest cause of death among diseases of the genitourinary system, with 109 recorded. Diseases of the prostate was next with 20, followed by acute nephritis with 18 and other diseases of the genitourinary tract, 9. One physician died of sulfadiazine anuria.

Of the deaths attributed to certain other infectious diseases, influenza was responsible for 7, poliomyelitis 3, mumps 2 and bacteremia or septicemia 1.

Diseases of the bones contributed to 3 deaths, 1 of which was due to Paget's disease.

Other causes of death among physicians during 1947 were diabetes 44, arthritis 9, multiple myeloma 8, exfoliative dermatitis and alcoholism 3 each, splenomegaly and other diseases of the spleen and rheumatic fever 2 each, and 1 each to heat stroke, diseases of the thyroid, Addison's disease, acute leukemic reticulo-endotheliosis, subarachnoid hemorrhage, exposure and malnutrition.

Twenty-four physicians in the total number published died following operations. In 51 cases the cause of death was not obtained.

Suicides and Homicides.—Forty suicides were recorded last year as compared to 55 during 1946. Seventeen were attributed to bullet wounds, 7 to

poisoning, 4 to cut arteries, 3 to drugs, 2 each to hanging and gas and 1 each to anesthesia, jumping and burning to death; 2 methods were unspecified. The 5 homicides reported were due to shooting. Two physicians were killed by unknown assailants, 1 in a holdup, 1 by cattle thieves and 1 by a patient.

Accidental Deaths.—Of the 159 accidental deaths, 68 involved automobiles; 5 were collisions with trains and 1 a collision with a streetcar. Thirteen died in airplane crashes and 9 were drowned, 1 when his fishing boat went over a dam; 6 died of burns. One physician was killed when his tractor toppled down an embankment, and 2 died in the Wynecoff Hotel fire in Atlanta, Ga.

Association Officers.—Among the decedents were 2 former vice presidents of the American Medical Association and 1 trustee. Of the 4 council members, 1 had been a chairman. Eight had been section officers, 2 had served on the judicial council and 30 had been members of the House of Delegates. In the total number were 34 who had been presidents of state medical societies and 1 a president-elect; 221 were or had been presidents of county medical societies as compared to 216 for 1946.

Miscellaneous Positions.—Among the decedents 239 had been teachers in medical schools. Ten had been deans, and 167 were professors as compared to 122 in 1946. One was a member of the Federation of State Medical Boards, 1 each served on the National Board of Medical Examiners and the Basic Science Board, 27 on the Board of Medical Examiners and 106 on boards of education. There were 193 health officers, 102 members of boards of health, 18 city councilmen, 53 coroners, 41 mayors, 30 pharmacists, 25 authors, 22 legislators, 20 editors, 18 bank presidents, 9 missionaries, 9 police physicians or surgeons, 4 postmasters, village presidents and dentists, respectively, and 2 sheriffs. One had been a lawyer and 1 a justice of the peace.

Government Service.—Of the decedents who had been in the military forces, 7 had served on the Mexican Border, 1 in the Boer War, 2 in the Boxer Rebellion, 1 in the Civil War, 2 in the Philippine Insurrection, 64 in the Spanish American War, 603 during World War I, 175 in World War II and an additional 117 on draft boards. One had been a contract surgeon for the U. S. Army, 1 a consultant to the Surgeon General of the Army and to the Secretary of War, 1 had served on a special commission of the Secretary of War and 2 were on procurement and assignment duty. Nine had served in the National Guard.

Twenty-four physicians had been in U. S. Public Health Service, 21 in the Public Health Service Reserve, 13 in the Indian Service and 10 with the Veterans Administration.

Killed in Action.—Reports of physicians killed in action and dying in military service during World

War II continued to be cleared through official military channels. Thirty-three were reported killed in action as compared to 40 in 1946. Nine died in the South China Sea when the Japanese ship on which they were being transported as prisoners to Japan was sunk Oct. 24, 1944. Other locations of death listed were in the Philippines 4, the Pacific 4, aboard ship 4, 2 each in Germany and Okinawa, 1 each in Dutch New Guinea, Iwo Jima, Guadalcanal, Java, Netherlands and North Africa. Seven of those killed in action were between the ages of 25 and 29, 19 between 30 and 34, 4 between 35 and 39 and 3 between 45 and 49.

Died While in Military Service.—Thirty-four other physicians died while in military service as compared to 128 in 1946. Ten died in accidents, 4 of which involved airplanes and 2 automobiles. One died at 24 years of age, 9 each between 25 and 29 and 30 and 34, 3 between 35 and 39, 4 between 40 and 44, 3 between 45 and 49, 1 between 50 and 54, 3 between 55 and 59 and 1 between 60 and 64.

The average age of the physicians killed in action was 31.9 years as compared to 35.2 in 1946, and of those who died in military service 37.1 years as compared to 42.8 for 1946. Deducting the military deaths, the average age at death of the remaining physicians is 67.5 years for 1947, the same as for 1946.

This brings the total deaths of physicians recorded in THE JOURNAL since the outbreak of World War II on Dec. 7, 1941 to 290 killed in action and 535 who died while in military service, or a total of 825 military deaths. Others are in process of being cleared through official military channels and await publication.

RABIES DIAGNOSED BY INOCULATION OF SALIVA INTO ANIMALS

A boy, aged 13 months and previously well, developed fever, became disoriented and refused food. His hands moved constantly and he would neither sit nor stand. Stiffness of the neck or back was not present, and the reflexes were not abnormal. The pupils reacted to light and one was slightly larger than the other. Impairment of hearing or speech did not occur. Five weeks previously the patient fell on a toy while playing in his pen and sustained a laceration of the upper lip which required several sutures. The wound was healed on admission to the hospital, and the reddened scar was not indurated. The rectal temperature was 103 F., the pulse rate 100, the blood pressure 120 systolic and 80 diastolic; otherwise the examination revealed nothing extraordinary. The leukocyte count was 7,200 with 40 per cent polymorphonuclears and 58 per cent lymphocytes. The hemoglobin was 12 Gm. The tuberculin test was negative. The cerebrospinal fluid, obtained under pressure of 200 mm. of water, contained 13 mononuclear cells per cubic millimeter and a normal amount of sugar; it was free from globulin. Cultures of the cerebrospinal fluid and of the blood were nega-

tive. During the first day in the hospital the child apparently did not have pain and did not recognize his parents. Hyperexcitability with muscular twitching and labored respiration alternating with brief periods of sleep characterized the third day. At times he cried out. These alternating periods of muscular excitability and sleep continued for several days. Respiratory difficulty was present only at periods of spasm. The pulse occasionally was extremely rapid, and abdominal distention was present for brief periods. On the eighth day examination of the spinal fluid revealed 110 cells, of which 90 per cent were mononuclear. On the tenth day the boy appeared more alert but weaker, and peripheral vascular collapse seemed imminent. The first true difficulty with swallowing appeared that night. Early the next morning he expired while sleeping quietly. Permission for necropsy was denied.

A specimen of the patient's saliva had been obtained and part of it was injected intracerebrally into mice. To another specimen of saliva penicillin was added, and the mixture was injected intracerebrally into seven other animals. The mice injected with the untreated saliva died within twenty-four hours. The mice injected with the mixture of saliva and penicillin appeared sick the next day, but on the second day 4 of them had recovered. The remaining 3 mice died of bacterial infection in from one to five days. In 1 mouse inoculated with the saliva-penicillin mixture there developed symptoms suggestive of encephalitis due to rabies on the fifteenth day. This mouse was killed, and its brain was ground in a mortar containing sodium chloride solution; the supernatant liquid was inoculated into 7 other mice, which in a few days showed symptoms of encephalitis. Negri bodies were found in the brain of some of these animals, and thus confirmed the diagnosis which had been suspected. Sections from the brain of an inoculated mouse revealed intracytoplasmic inclusion bodies in the nerve cells. Still further confirmation was provided by means of neutralization tests.

Further inquiry revealed that on the day when injury to the child's lip occurred a recently acquired puppy had acted peculiarly and had disappeared. Despite cooperation by public health agencies, newspapers, radio, police and humane organizations the pup could not be found. The dog was not known to have been in free contact with the child. The breeder from whom the pup was obtained stated that the animal had been confined closely and had not received antirabic prophylaxis; also, that symptoms of rabies were not present among its kennel mates.

The diagnosis in this case was difficult. There was no history of definite exposure to a rabid animal, and the clinical observations, physical examination and laboratory data revealed nothing specific. The changes in the cerebrospinal fluid were not in accord with those mentioned in the textbooks. Periods of hyperexcitability and hyperactivity alternating with moments of sleep or coma occur in a variety of syndromes. Fur-

thermore, the patient survived several days with little evidence of dysphagia and a complete lack of progressive deterioration.

The case here described¹ is apparently the first in which the diagnosis of rabies was established by recovery of the virus from saliva. The report suggests that the method used may be followed by others and that the saliva should first be treated with penicillin or another bacteriostatic agent before inoculation into mice, in order to minimize the chances of bacterial infection which might cause the true diagnosis to be missed.

HEREDITY IN ESSENTIAL HYPERTENSION

Weitz¹ in 1933 measured the blood pressure of brothers and sisters of hypertensive persons and found that the incidence of elevation was significantly higher among siblings of persons with hypertension than among siblings of persons without hypertension. Ayman² studied the blood pressure of every member of a family for three generations, totaling 32 members above 13 years of age. One hundred per cent of the first generation, 80 per cent of the second and 25 per cent of the third had elevated levels of the blood pressure on two or more readings. Ayman³ in a later article reported on a direct study of the blood pressure, height and weight of 1,524 members of two hundred and seventy-seven families. Elevated systolic and diastolic blood pressure readings occurred in 148 of 780 members aged from 14 to 39 years of the second generation. These 148 subjects had the same average age and sex incidence as the entire group of 780 children, but they were 14½ pounds (6.5 Kg.) above the average weight compared to 4½ pounds (2 Kg.) above the average weight for the remainder of the group. In families whose parents had absolutely normal blood pressures the incidence of elevated blood pressure in the children was only 3.1 per cent. In families in which 1 parent had arteriolar hypertension the incidence of elevated readings in the children rose to 28.3 per cent. In the families in which both parents had arteriolar hypertension the incidence of elevated readings in the children reached the striking level of 45.5 per cent. Of 70 brothers and sisters of parents whose blood pressure was normal, 37.3 per cent had elevated blood pressure readings, whereas of 86 brothers and sisters of parents with arteriolar hypertension, 65.3 per cent had elevated blood pressure readings. This unusually high incidence of elevated blood pressure readings in the children, brothers, sisters and parents of subjects with arteriolar hypertension, as compared with similar relatives of subjects with normal blood pressure, offers

1. Duffy, C. E.; Woolley, P. V., Jr., and Notling, W. S.: Rabies (A* Case Report with Notes on the Isolation of the Virus from Saliva). *J. Pediat.* **31**: 440-447 (Oct.) 1947.

1. Weitz, W.: Zur Aetiologie der genuinen oder vasculären Hypertension. *Ztschr. f. klin. Med.* **96**: 151, 1923.

2. Ayman, D.: The Hereditary Aspect of Arteriolar (Essential) Hypertension, Report of a Family, *New England J. Med.* **209**: 194 (July 27) 1933.

3. Ayman, D.: Heredity in Arteriolar (Essential) Hypertension, *Arch. Int. Med.* **53**: 792 (May) 1934.

strong evidence for the existence of a hereditary factor in essential hypertension.

Hines⁴ studied cold pressor test results in 608 persons with normal blood pressure, in ten pairs of twins and in 256 members of thirty hypertensive and non-hypertensive families. Analysis of the family history of 608 persons with normal blood pressure and of 267 persons with essential hypertension revealed that a positive family history of hypertensive cardiovascular disease was found to be five times as frequent among persons with hypertension or in those who were hyper-reactors to the cold pressor test as it was among persons who reacted normally to the test. The type of blood pressure reaction to the test in the twins and the family groups followed an inheritance pattern. Hines did not find a single hyperreactor who did not have one parent who had hypertension or was a hyper-reactor. This trait therefore appears to be an inherited dominant characteristic. The excessive or hypertensive type of reaction to the cold test occurred predominantly among members of families in which there was a hypertensive diathesis. Hines considered these observations evidence that the hereditary factor plays an important role in the development of essential hypertension. The inherited quality may be a vasomotor system which reacts excessively to certain external and internal stimuli and eventually results in essential hypertension.

Platt⁵ reported on 116 cases, 78 of which were instances of essential hypertension, 4 of probable essential hypertension, 18 of secondary hypertension, 10 of uncertain secondary etiology and 6 of doubtful origin. In 76 per cent of his cases of essential hypertension there was a family history suggestive of hypertension, and in only 6.4 per cent did the family history appear to eliminate hypertension. In the secondary hypertensive group and in the control group figures were approximately 35 and 39 per cent, respectively. These results closely correspond to those of Weitz. Platt considered that data assembled by means of history taking are not sufficient to prove that essential hypertension is conveyed as a mendelian dominant. However, the facts are compatible with the hypothesis that essential hypertension is a hereditary disease conveyed as a mendelian dominant with a rate of expression of more than 90 per cent. The importance of realization of heredity in essential hypertension has a practical aspect. In a case of hypertension of uncertain origin a strongly suggestive family history provides nearly a 6 to 1 chance that the case is one of essential hypertension, whereas if the history gives strong evidence against hypertension in the parents the chances are more than 3 to 1 in favor of some secondary cause. This is particularly important in the search for cases of hypertension with unilateral renal pathologic changes in which a cure by nephrectomy may be possible.

MORE ABOUT VAGOTOMY

The concept that the hypersecretion of gastric juices in gastroduodenal ulcer is largely neurogenic caused Dragstedt in 1943 to treat patients with intractable gastroduodenal ulceration by an operation designed to remove permanently and as completely as possible the vagus innervation of the stomach. The physiologic effect of the operation is both motor and secretory. Loss of motor function of the stomach is followed by atony and dilation. There is also a definite effect on the secretion, in most instances shown by histamine achlorhydria. The most striking effect of vagotomy on the patient with chronic peptic ulcer is the immediate and often dramatic relief of pain. The operation appears to be particularly indicated in patients who have had other surgical interventions such as pyloroplasty, posterior gastrojejunostomy or gastric resection and who have recurrent ulceration. Greatest success is noted in patients with marginal ulcer following partial gastric resection.

In a group of 170 patients on whom vagotomy was performed, Harper and Dragstedt¹ found by physiologic tests that section of the vagus nerves was probably incomplete in 18 cases. Six of these patients complained of recurrent or persistent symptoms of ulcer, and in 2 cases an undamaged vagus fiber was found at the second operation. Division of this nerve was followed by complete relief. The remaining 164 patients were free from all types of ulcer distress on an entirely unrestricted diet and without medicaments. Delayed gastric emptying and diarrhea have proved to be transitory and inconsequential. The transthoracic approach was employed in 61 patients and the transabdominal in 109. Vagotomy was combined with gastroenterostomy in 71 patients. Dragstedt considers that vagotomy is preferable to partial gastric resection when the ulcer is situated on the lesser curvature close to the esophagus, a condition which would involve nothing short of total gastrectomy. Patients in whom gastric acidity following the operation was unchanged experienced the same relief of pain. Dragstedt believes that the healing of gastric ulcers after vagotomy, although there may be only a slight change in the concentration of acid in the gastric content, suggests that other factors than peptic digestion alone may play a role in the formation of these ulcers.

In a series of 74 patients operated on at the Massachusetts General Hospital, 87 per cent of the patients, according to Moore,² have had good results and are well satisfied with their operation two to thirty months postoperatively. Five patients have had a frankly poor result either with a demonstrable recurrence or with

4. Hines, E. A., Jr.: The Hereditary Factor in Essential Hypertension, *Ann. Int. Med.* 11: 593 (Oct.) 1937.

5. Platt, R.: Heredity in Hypertension, *Quart. J. Med.* 16: 111 (July) 1947.

1. Harper, P. V., Jr., and Dragstedt, L. R.: Section of the Vagus Nerves to the Stomach in the Treatment of Benign Gastric Ulcer, *Arch. Surg.* 55: 141 (Aug.) 1947.

2. Moore, F. D.: Resection of the Vagus Nerves for Ulcer: An Interim Evaluation: I. Operative Technic and Hospital Management *Arch. Surg.* 55: 164 (Aug.) 1947.

symptoms of ulcer. Five other patients have had sufficiently severe side effects consisting of diarrhea or other gastrointestinal manifestations to materially detract from their result. Only two postoperative gastroenterostomies have been necessary.

Grimson and his associates³ at the Duke University School of Medicine have summarized their experience on 36 patients on whom vagotomy was performed by stating that 9 of the 32 patients with duodenal ulcer are completely satisfied with the results of the operation, 22 are almost completely satisfied and 5 are only partially satisfied. They have concluded that a transthoracic vagotomy alone should not be used as a standard treatment of duodenal or gastric ulcer. They believe, however, that vagotomy may be of value when combined with gastroenterostomy or when employed for marginal ulcer.

While admitting that vagotomy will decrease or abolish gastric acidity and decrease hypersecretion and hypermotility, Lahey⁴ has objected to its routine employment because of the frequency with which gastroenterostomy is required as a part of the procedure. There is no adequate proof in his opinion that gastric acidity may not return and therefore that there may not be a continuation of the recurrence of gastrojejunal ulcers and gastrojejunal colic fistulas as a result of these gastroenterostomies. In Lahey's opinion vagotomy is the ideal procedure for a patient who has had a subtotal gastrectomy and then a recurrent jejunal ulcer.

The clinical results in 41 patients subjected to vagotomy, either alone or combined with another operative procedure and followed for from two to twenty-four months, have been satisfactory in 34 cases and unsatisfactory in 7, according to Johns and Grose.⁵ In the satisfactory group the disappearance of ulcer pain has been most striking and has overshadowed the unpleasant side effects of vagotomy, such as an increase in the number of stools with occasional diarrhea, postprandial fullness and occasional postoperative vomiting. In the unsatisfactory group 2 patients have come to reoperation, 1 for recurrence of ulceration and 1 for intractable gastric retention and dilatation caused by motor paralysis due to vagotomy. All the failures were in patients who had vagotomy without any additional operative procedure. The results have been uniformly satisfactory in the 24 patients undergoing some such procedure in addition to vagotomy.

An adverse criticism of vagotomy has been expressed by Walters and his associates⁶ at the Mayo Clinic

they summarize their experience with gastric "neurectomy" by stating that the results were inconstant, variable and in most cases unpredictable. While there was relief of pain, the patients suffered much discomfort due to dilation of the stomach, leading to retention of gastric contents. Relief of pain did not necessarily signify healing of the ulcer, since acute perforation of duodenal ulcer occurred in 1 of their cases. Reduction of gastric acidity has occurred in most instances but not in all. Some of the patients complained of frequent belching of foul-smelling gas and fullness and bloating after meals, and a few have complained of nausea and diarrhea. Subsequent operations have been necessary in some instances to remove the persistent ulcer or to provide drainage. The greatest field of usefulness for the operation seems to be in the treatment of ulcers after partial gastrectomy and in certain cases of nonobstructive duodenal ulcer in which the cephalic phase of gastric resection is definite and the pain intractable.

The period of observation is still too short⁷ to permit a final evaluation of the method. The questions of ultimate regeneration of the divided vagi and the results of the undesirable side effects of the operation, such as greatly impaired motility and dilatation of the stomach are yet to be solved.

Current Comment

A COLLEGE PRESIDENT PLACES ENGLISH FIRST

Frequently attempts have been made to stimulate interest in exposition in the minds of medical scientists. Laurence M. Gould, an eminent geologist, has noticed deficiencies in expression in the printed matter of several fields of science. By virtue of his presidency of a liberal arts college, he is in a position to urge corrective measures at the educational grade where they will do the most good. He wrote:¹

Language, which here means the English language, must therefore be the chief concern of a liberal education. Indeed the basic characteristic of an educated man is that he be "literate and articulate in verbal discourse." Here is one of the keys to the major needs of education at all levels and in all departments. . . . If I could impose my will completely at any one point . . . I would require four years of English of all students and some extra courses in composition in the senior year for those who think they want to be scientists.

If Dr. Gould is successful in thus imposing his will, and if some of his students will choose medicine as the science they wish to pursue, good will be accomplished. Their ability in medical school to conform to good English usage would not militate too strongly against them; at least some of their professors could understand them.

3. Grimson, K. S.; Baylin, G. J.; Taylor, H. M.; Hesser, F. H., and Rundles, R. W.: Clinical Evaluation of Complications Observed After Transthoracic Vagotomy, *Arch. Surg.* 55:175 (Aug.) 1947.

4. Lahey, F. H.: A Position on the Employment of Vagotomy in the Surgical Treatment of Peptic Ulcer, *Lahey Clin. Bull.* 5:66 (Jan.) 1947.

5. Johns, T. N. P., and Grose, W. E.: Symposium on Vagotomy for Peptic Ulcer, *Bull. Johns Hopkins Hosp.* 81:92 (Aug.) 1947.

6. Walters, W.; Neibling, H. A.; Bradley, W. F.; Small, J. T., and Wilson, J. W.: Gastric Neurectomy: Anatomic and Physiologic Studies with Favorable and Unfavorable Results in the Treatment of Peptic Ulcer, *Arch. Surg.* 55:151 (Aug.) 1947.

7. Vagotomy for Peptic Ulcer, editorial, *J. A. M. A.* 133:181 (Jan. 18) 1947.

1. Gould, L. M.: The Inaugural Address: Science and the Other Humanities, *Carleton College Bulletin* 42:14-32 (Nov.) 1945.

ORGANIZATION SECTION

Proceedings of the Cleveland Interim Session

MINUTES OF THE INTERIM SESSION OF THE HOUSE OF DELEGATES OF THE
AMERICAN MEDICAL ASSOCIATION, HELD IN CLEVELAND, JANUARY 5-6, 1948

(Concluded from Page 191)

HOUSE OF DELEGATES

Second Meeting—Tuesday Morning, January 6

Report of Reference Committee on Credentials

Dr. G. Henry Mundt, Chairman, announced that 165 delegates had been registered and that two were in process of being registered; the Speaker stated that a quorum was present and that the House was ready to proceed with business.

Roll Call

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otolaryngology and Rhinology, and carried, the House dispensed with the roll call.

Report of Reference Committee on Amendments to the Constitution and By-Laws

Dr. W. A. Coventry, Chairman, presented the following report:

1. *Section on Diseases of the Chest.*—Your Reference Committee presents the following resolution: *Resolved*, That the action of the House of Delegates in June 1947 regarding the creation of a Section on Diseases of the Chest be approved, as it conforms to the Constitution of the American Medical Association as expressed in Article 9, Section 3, page 5. Your committee recognizes that Chapter IX, Section 3, page 24 of the By-Laws allows a possible conflict of interpretation and suggests that this conflict between the Constitution and the By-Laws be referred to the Committee to Study Revision of the Constitution and By-Laws.

2. *Resolution on Increasing Annual Fellowship Dues.*—Your Reference Committee recommends that the Resolution on Increasing Annual Fellowship Dues, presented by the Board of Trustees, be adopted as amended, as follows:

Resolved, That the annual Fellowship dues and the subscription price of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION shall be fixed by the Board of Trustees and the same shall be payable in advance on the first day of January in each year provided that the annual dues shall not exceed \$12, and provided that the amount of the same shall be announced in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION not later than November 1 of each year, except that for the year 1948 such dues and subscription price of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION shall be \$12 and shall be payable in advance not later than April 1 of that year, provided that a notice of the said dues and subscription price of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION set by the adoption of this amendment is given each Fellow prior to April 1, either in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION or by mail as circumstances may indicate.

Respectfully submitted,

W. A. COVENTRY, Chairman.
HOYT B. WOOLLEY.
F. J. L. BLASINGAME.
JOHN J. MASTERSON.
J. D. HAMER.

Dr. Coventry moved adoption of the first section of the report of the Reference Committee, requesting that the matter be referred to the Committee to Study Revision of the Constitution and By-Laws. The motion was seconded by Dr. Burt R. Shurly, Section on Laryngology, Otolaryngology and Rhinology, and carried, after discussion by Dr. Arthur J. Bedell, Section on Ophthalmology; Dr. William D. Stovall, Wisconsin; Dr. F. F. Borzell, Vice Speaker; Dr. E. Vincent Askey, California; the Speaker, and Dr. Coventry.

It was moved by Dr. Coventry, seconded by Dr. Walter E. Vest, West Virginia, and carried after discussion by Dr. Thomas M. D'Angelo, New York; Dr. T. K. Gruber, Michigan; Dr. George F. Lull, Secretary; Dr. E. L. Henderson, Chairman, Board of Trustees; Dr. William Bates, Pennsylvania; Dr. Coventry, and the Speaker, who announced that a vote on this question is a change in the By-Laws, that the report of the Reference Committee on the Resolution on Increasing Annual Fellowship Dues be adopted.

On motion of Dr. Coventry, seconded by Dr. Walter E. Vest, West Virginia, and carried, the report of the reference committee was adopted as a whole.

Report of Reference Committee on Legislation and Public Relations

Dr. William Bates, Chairman, presented the following report, which as presented contains the amendments made by the House, and which was adopted section by section and as a whole after amendment, on motions of Dr. Bates, duly seconded and carried.

1. *World Medical Association.*—Your Reference Committee has considered the report rendered by Dr. E. L. Henderson, Chairman of the Board of Trustees, concerning the World Medical Association.

Your committee approves this report and recommends that the delegates and alternate delegates to the meeting of the World Medical Association be commended for the work which they have accomplished.

2. *Resolutions on Disapproval of Principles of Grants-in-Aid to All States Regardless of Established Actual Need.*—Your Reference Committee has seriously considered the resolutions from the Medical Society of New Jersey presented by Dr. T. K. Lewis with reference to Title VII of Senate Bill 545 now pending in the 80th Congress. Your committee concurs in the sense of these resolutions and is cognizant of the principle of "demonstration of need" adopted by this House of Delegates on June 13, 1944. However, your committee feels that adoption of these resolutions at this time would be politically inexpedient and might alienate valuable congressional support of our organization. Your committee recommends that this motion be not acted on at this time.

3. *Resolution on Propaganda Distributed to the Armed Forces.*—Your Reference Committee has considered the resolution presented by Dr. Herbert H. Bauckus, New York, concerning propaganda distributed to the Armed Forces. Your

committee concurs in the spirit of this resolution but recommends that the last half of the final paragraph be amended to read: "That the Board of Trustees be empowered to take any action it sees fit, after study of this pamphlet, 'Is Your Health the Nation's Business,' to call the attention of Congress again to this additional misuse of federal funds for propaganda purposes."

Respectfully submitted,

WILLIAM BATES, Chairman.
CLAUDE R. KEYPORT.
ALLEN H. BUNCE.
KARL S. J. HOHLEN.
D. A. RHINEHART.

Reference Committee on Medical Education

Dr. Creighton Barker, Chairman, presented the following report, which on motions of Dr. Barker, duly seconded and carried, was adopted section by section and as a whole after discussion, a motion to amend the third section of the report, which was proposed by Dr. B. R. Kirklin, Section on Radiology, seconded by Dr. Herbert P. Ramsey, District of Columbia, being lost:

1. *Interim Report of Committee on Nursing Problems.*—In the Interim Report of the Committee on Nursing Problems presented to the House yesterday, the Chairman, Dr. Thomas Murdock, recommended that the American Medical Association cooperate with the American Hospital Association and the American Nurses Association in the creation of a permanent conference committee to consist of fifteen members, five to be named by the Board of Trustees of the American Medical Association. The purpose of this committee is to make a continuing study of the problems related to nursing that are common to all.

The Reference Committee on Medical Education wishes to recommend the adoption of the proposal as made by the special Committee on Nursing Problems.

2. *Resolution on Endorsement of National Multiple Sclerosis Society.*—The resolution presented by Dr. Hans H. Reese, Section on Nervous and Mental Diseases, recommending that the American Medical Association endorse officially the National Multiple Sclerosis Society and its program of education of the public in this field and of undertaking investigations leading to a solution of its problem in qualified hospitals and medical centers, was approved by the Reference Committee on Medical Education.

3. *Resolution on Intern and Resident Training and Resolutions on Distribution of Interns.*—The Reference Committee received resolutions relating to the training of interns and residents introduced by Dr. Hilton S. Read of New Jersey and Dr. Edgar P. McNamee of Ohio.

The resolution received from Dr. Read asked that a committee including two general practitioners be appointed from this House to study the potentialities of requiring, in the interest of promoting general practice, a year of rotating internship before permitting a candidate to elect specialty training and to study also the supply and technics of distribution of interns and to report to this House at the June session.

The resolutions introduced by Dr. McNamee discussed an agreement for intern placement formulated by the Association of American Medical Colleges and agreed to by the Council on Medical Education and Hospitals of the American Medical Association and the American, Protestant and Catholic hospital associations. They proposed that the House of Delegates be requested to take such action as will result in rigid adherence by all hospitals to this plan for intern placement and that the House of Delegates instruct the Council on Medical Education and Hospitals to study the problem of unequal distribution of interns and formulate a plan in cooperation with the Association of American Medical Colleges and the American, Protestant and Catholic hospital associations limiting the number of interns per hospital on the basis of bed capacity further to insure an equitable distribution of interns.

These resolutions were closely related, and the Reference Committee on Medical Education wishes to submit a consolidation of them as follows:

WHEREAS, The number of positions for intern training in approved hospitals exceeds by large numbers the available interns; and

WHEREAS, It is becoming increasingly difficult each year for approved hospitals and those hospitals desiring approval to secure interns from approved medical schools; therefore be it

Resolved, That the speaker of this House appoint a special committee on Intern Placement consisting of five members, including two general practitioners, (a) to study the supply and distribution of interns with particular emphasis on furthering interest in general practice, (b) to cooperate with the Council on Medical Education and Hospitals and other interested agencies in an effort to arrive at a method leading to a better distribution of interns, and (c) to present a report of its findings and recommendations to this House at the annual session in 1948.

Respectfully submitted,

CREIGHTON BARKER, Chairman.
A. A. WALKER.
J. MORRISON HUTCHESON.
ROBERT E. SCHLUETER.

Report of Reference Committee on Reports of Board of Trustees and Secretary

Dr. O. W. H. Mitchell, Chairman, submitted the following report, which was adopted on motion of Dr. Mitchell, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried:

Your Reference Committee has given serious consideration to the report of the Board of Trustees regarding the increased cost of the numerous activities of the American Medical Association. These activities, so important and essential for the health of the people and the maintenance of high standards for preventive medicine, medical care and research, must be maintained.

Your Committee therefore recommends that provisions be made as soon as possible for an increase in Fellowship dues and subscription to THE JOURNAL consistent with changes which may be made in the By-Laws.

Respectfully submitted,

O. W. H. MITCHELL, Chairman.
H. G. HAMER.
E. H. CARY.
ROBERT H. HAYES.
J. B. LUKENS.

Report of Reference Committee on Reports of Officers

Dr. Deering G. Smith, Chairman, presented the following report, which on motions of Dr. Smith, duly seconded and carried, was adopted section by section and as a whole after discussion:

ADDRESS OF SPEAKER

The Reference Committee on Reports of Officers thanks the Speaker for his brief and pertinent address and expresses its appreciation of his efforts to expedite the work of the House, as was shown in the opening meeting of this session.

It is realized that the proposed revision of the Constitution cannot be considered at this session, and therefore it seems best that the consideration of the proposed revision of the By-Laws be deferred until the next annual session at Chicago, when the Constitution and By-Laws can be considered together. It is hoped that this work will be completed at that time, and it is asked that the members of the House do all in their power to expedite it.

ADDRESS OF THE PRESIDENT

1. The Reference Committee compliments the President on his report of his first six months' stewardship. The Committee appreciates his efforts to inform the medical profession and the public of the important activities in which our Association is engaged in behalf of a higher level of health for our nation. Organized medicine should realize the demands made on his time and understand his inability to accept all the invitations that he receives.

The Committee is pleased to learn that the President's recommendation of closer affiliation of medical students with this Association has been considered and that definite plans have been drawn to consummate it. It is wished to emphasize his statement in respect to public relations that "a certain responsi-

bility devolves on each doctor and employee of the profession to interpret correctly its functions in terms of public benefit."

Dr. Austin Smith and his colleagues are to be congratulated on their excellent work in writing the Handbook, and it is recommended that the Board of Trustees consider the distribution of a copy to each member so that he may familiarize himself with what the American Medical Association is doing for him and in behalf of a higher quality of medical care for the American people.

It is pleasing to learn from Dr. Bortz that the Woman's Auxiliary is reaching the goal that it hoped to attain.

2. The President's report on National Emergency Medical Service must be seriously considered by each physician, and it should be emphasized that speed is vital in the drafting of plans. It is hoped that each state society has established a similar committee, as Dr. Bortz recommended at Atlantic City, N. J., last June, but if any state has failed to do so its delegates should see that establishment of this committee is accomplished.

In conclusion, your Committee repeats the closing sentence of Dr. Bortz's admirable address: "With teamwork and loyalty, and an optimistic attitude, the membership may look forward hopefully to 1948 as one of the big years for organized medicine and, of even greater importance, through its activities to a more healthful nation."

Respectfully submitted,

DEERING G. SMITH, Chairman.
WARREN L. ALLEE.
JOHN W. GREEN.
BENJAMIN H. MINCHEW.
CLIFFORD C. SHELBURNE

Report of Reference Committee on Rules and Order of Business

Dr. Thomas K. Lewis, Chairman, presented a report, which was adopted section by section and as a whole, after amendment, on motions of Dr. Lewis, duly seconded, and carried. The report as amended reads as follows:

REPORT OF COMMITTEE TO EXPEDITE WORK OF HOUSE OF DELEGATES

Your Reference Committee has considered carefully the report of the Committee to Expedite Work of the House of Delegates. It wishes to express appreciation of the comprehensiveness and quality of this report.

1. *Administrative Matters.*—This section of the report leaves little for discussion, since it concerns itself with administrative measures already in operation at this session. Your committee wishes to congratulate the office staff for the efficient manner in which the recommendations contained in this section have been put into effect.

2. *Standing Rules:* (a) The portion devoted to reference committees advocating the appointment or nomination of reference committees in advance of session of the House in June was approved, with the following change in the last sentence of the paragraph beginning "Reference Committees," which has been altered to read as follows: "Therefore the Committee recommends that it be a standing rule that the Speaker of the House nominate reference committees two months in advance of a session, and that the list of nominees be published one month in advance of a session."

(b) The paragraph pertaining to the method of procedure by the Reference Committee on Credentials is unchanged.

(c) The next paragraph recommends that there shall be no address by the President-Elect.

(d) The next paragraph has been altered to read as follows: "A standing rule is recommended that the Reference Committee on Executive Session shall consider all matters referred to it in executive session, and shall report to the House of Delegates only when the House is in executive session."

(e) In the paragraph pertaining to guest speakers, the last sentence has been altered to read as follows: "It is recommended that a standing rule be adopted to the effect that distinguished guests shall not be presented for addresses before the House of Delegates."

(f) The next three paragraphs have not been changed.

(g) In the next paragraph the following changes have been made: In the third line from the bottom the words "two-thirds" have been deleted and the phrase at the end of the paragraph has been modified to read as follows: "(except new business presented by the Board of Trustees or the sections, as provided for in the By-Laws)," so that this paragraph will read as follows: "The Committee recommends that a standing rule be adopted that all new business and resolutions shall be introduced at the first meeting of the House of Delegates (Monday morning). However, new business may be introduced at the Tuesday afternoon meeting (or on Wednesday, if a Wednesday meeting is held) by a majority vote of the House. On Thursday no new business shall be introduced without unanimous consent (except new business presented by the Board of Trustees or the sections, as provided for in the By-Laws)."

(h) The next paragraph advocating the establishment of two separate orders of business is unchanged. The last sentence in paragraph 3 has been altered to read as follows: "It was the opinion of the Committee that the Monday meeting of the House should recess by midafternoon to allow time for an executive session in which resolutions relating to private affairs of the Association may be introduced."

(i) There have been no changes in the last five paragraphs of the report.

(j) Proposed Order of Business: In the Monday morning program of the annual session delete the words "if any" in No. 6. In the Monday afternoon meeting the following changes have been made, so that this section will read as follows: "Introduction in executive session of resolutions dealing with private affairs of the Association. (Tuesday morning shall be left open for meetings of reference committees.)" No other changes have been made in the proposed order of business for the annual session.

(k) In the Monday morning program of the proposed Order of Business for interim sessions No. 6 has been altered to read "Address of the President"; in No. 9 (1), (2), (3) and (4) the word "Chairman" should be stricken out, and No. 9 (4) should read "Council on Medical Service."

(l) The 2:30 p. m. session has been altered to read as follows: "Time for introduction in executive session of resolutions dealing with private affairs of the Association. (Tuesday morning shall be left open for meetings of reference committees)."

(m) The last paragraph in this report, pertaining to changes in the By-Laws, does not fall in the scope of activity of this committee.

RESOLUTION ON FIXING DATE OF INTERIM SESSION

It is the expressed intent of the Board of Trustees to date this session for December. However, in view of the fact that it may at times (this year, as an example) be impossible to secure necessary accommodations in the month of December, the Board of Trustees should be given greater latitude in fixing the exact date of the interim session. Therefore your committee disapproves of this resolution.

Respectfully submitted,

THOMAS K. LEWIS, Chairman.
HARRY ARANOW.
CHARLES R. ROUNTREE.
H. RUSSELL BROWN.
MORTON D. WILLCUTTS.

Report of Reference Committee on Sections and Section Work

Dr. Walter G. Phippen, Chairman, presented the following report, which was adopted section by section and as a whole after discussion, on motions of Dr. Phippen, duly seconded, and carried:

The Reference Committee on Sections and Section Work had presented to it for consideration the report of the Council on Scientific Assembly.

That portion of the report dealing with the establishment of a Section on Diseases of the Chest was referred to the Committee to Study Revision of the Constitution and By-Laws and will not be considered.

The Reference Committee approves the action of the Council in granting a Session on Allergy and one on the History of Medicine in the Section on Miscellaneous Topics at the 1948 annual session. It refrains from commenting on the Session on Diseases of the Chest pending the report of the Committee to Study Revision of the Constitution and By-Laws.

The Reference Committee approves the action of the Council in regard to the Session on Legal Medicine and suggests that the papers by Dr. Moritz and his group be included in the Section on the General Practice of Medicine.

As no proponent appeared before this Committee relative to the report of the Council in deferring action on the application for the establishment of a Section on Physical Medicine, and as no member of the Council appeared to explain the reasons for this deferment, your Committee feels that it can neither approve nor disapprove of this action.

Your Committee understands that the Council on Scientific Assembly has already conferred with the Committee to Study Revision of the Constitution and By-Laws concerning the functions of the Scientific Assembly.

Respectfully submitted,

WALTER G. PHIPPEN, Chairman.
GROVER C. PENBERTHY.
GEORGE A. UNFUG.
VAL H. FUCHS.
CHARLES T. STONE.

Report of Reference Committee on Hygiene and Public Health

Dr. William L. Estes Jr., Chairman, presented a report which on motions of Dr. Estes, duly seconded and carried, was adopted section by section and as a whole after discussion and amendment. The amended report reads as follows:

There were two resolutions referred to this Committee.

1. *Resolution on Diagnosis of Tuberculosis.*—In the deliberations of your Committee this resolution has received careful consideration, which recognizes the fact that in the application and study of the uses of the x-ray method of detecting cases of pulmonary tuberculosis in the general population, numerous organizations have been involved, notably the United States Public Health Service, state departments of health, state tuberculosis societies and medical departments of schools.

In view of our present knowledge of the value of x-ray screening in pulmonary tuberculosis as a result of the surveys and investigations of the aforementioned organizations, the Committee offers the following substitute resolution, which broadens somewhat the scope of the original:

WHEREAS, Case finding with x-rays of the chest has produced exceptional results in the early diagnosis of pulmonary tuberculosis; and

WHEREAS, The more extensive use of this method will do much toward the elimination of the incidence of this disease; therefore be it

Resolved, That the American Medical Association recognizes the great effectiveness of this method in the screening and diagnosis of pulmonary tuberculosis and will endeavor through the appropriate council, bureau or committee of the American Medical Association to further, whenever in its judgment it is indicated, activation and support of measures designed to make as widespread as possible, particularly in schools and school personnel, the use of this highly efficacious diagnostic procedure.

2. *Resolutions on Examination of Immigrants.*—In view of the testimony presented to your Committee and the impression gained that enacting these resolutions will strengthen the position that the United States Public Health Service has taken in this matter, these resolutions are approved and their adoption recommended.

Respectfully submitted,

WILLIAM L. ESTES JR., Chairman.
ROBERTSON WARD.
JAMES P. WALL.
JAMES A. CRABTREE.
W. P. ANDERTON.

Report of Reference Committee on Miscellaneous Business

Dr. Edgar P. McNamee, Chairman, presented the following report, which, on motions of Dr. McNamee, duly seconded and carried, was adopted section by section and as a whole after discussion:

1. *Resolutions on Limitation of Tenure of Office of Delegates.*—These resolutions were thoroughly considered by your Committee. Several delegates appeared before your Committee to discuss them. It is the unanimous opinion of your Committee that it is the function of the state associations to determine the number of terms a delegate should serve. Therefore your Committee recommends that these resolutions be not approved.

2. *Resolutions on Geographic Selection of Trustees of the American Medical Association.*—These resolutions introduced by Dr. William H. Halley, Colorado, proposing to select trustees of the American Medical Association from different geographical areas, were carefully considered by your Committee. Several delegates appeared before your Committee to discuss them. After thorough consideration of the resolutions and the discussions of those who appeared before your Committee, it is the unanimous opinion of your Committee that the present method of selecting trustees is satisfactory; therefore your Committee recommends that these resolutions be not approved.

3. *Report to Board of Trustees of Special Committee Dealing with Hospitals and the Practice of Medicine.*—The report of the special committee, consisting of Drs. Louis H. Bauer, Roy W. Fouts and James R. Miller, to the Board of Trustees dealing with hospitals and the practice of medicine was thoroughly considered. This special committee has recommended:

... that the House of Delegates request the Board of Trustees to appoint a committee to study the various resolutions passed previously by the House, and that this committee be directed to arrange conferences with the hospital associations and the various specialist societies in order that a solution may be worked out which will be fair to all parties and redound to the benefit of the public. It is further recommended that the report of this committee, when prepared, be referred by the Board of Trustees to the Judicial Council for such revision of the Principles of Medical Ethics as may be indicated by the content of that report.

The opinions of those who appeared before your Committee in reference to this report were given careful consideration.

Your Committee recommends that the word "specialties" be substituted for the word "subspecialties" in the first paragraph. With this correction, your Committee unanimously approves the report and recommends its adoption. Your Committee also recommends that any action taken by this committee be reported to the House of Delegates at the 1948 annual session.

4. *Resolutions on Exploiting Professional Medical Services by Hospitals.*—The resolutions, introduced by Dr. James P. Kerby, Utah, with reference to the exploitation of professional medical service by hospitals were given long and serious consideration by members of your Committee after hearing prolonged discussion by various delegates who appeared before it.

Since many resolutions have previously been adopted by the House of Delegates pertaining to this practice, and, since the delegates now assembled have just recommended the appointment of a special committee to study and take appropriate action in regard to this matter, your Reference Committee recommends that these resolutions be given consideration by this new committee.

5. *Resolutions on Regulation of the Practice of Pathology by Registered and Approved Hospitals.*—Representatives of the pathologists introduced resolutions with regard to the practice of pathology in hospitals as a source of income for the hospital. Since these resolutions fall in the same category as others dealing with the practice of medicine by hospitals, your Committee recommends that they also be given consideration by the new committee to be appointed.

Respectfully submitted,

E. P. MCNAMEE, Chairman.
FLOYD S. WINSLOW.
HOMER L. PEARSON JR.
L. W. LARSON.
B. R. KIRKLIN.

Report of Board of Trustees

Dr. E. L. Henderson, Chairman, Board of Trustees, presented the report, which was amended to read as follows:

THE TEN POINT NATIONAL HEALTH PROGRAM OF THE AMERICAN MEDICAL ASSOCIATION

PROGRESS TOWARD ACCOMPLISHMENT OF ITS OBJECTIVES

POINT 1. NUTRITION—HOUSING—CLOTHING—RECREATION

The American Medical Association urges a minimum standard of nutrition, housing, clothing and recreation as fundamental to good health and as an objective to be achieved in any suitable health program. The responsibility for attainment of this standard should be placed as far as possible on the individual, but the application of community efforts, compatible with the maintenance of free enterprise, should be encouraged with governmental aid where needed.

Progress.—The recommendation made in Point 1 should be implemented, when necessary, by the community as a whole, including the medical profession. While the essentials with which it deals are not primarily medical, they have a definite relation to health. Physicians, as an integral part of the community, are assuming their responsibilities in promoting the attainment of the minimum standard recommended. The Association has made the following contributions in an effort to promote the objectives covered by this point:

(a) In nationwide radio programs weekly over the chains of the National Broadcasting Company, sponsored by the Association, frequent mention is made of the minimum standard suggested.

(b) Local transcriptions from which 5,000 or more local programs are now broadcast annually, and which were begun in 1943, deal frequently with these topics.

(c) Constant liaison and cooperative arrangements are maintained with organizations interested in these subjects, such as the American Association for Health, Physical Education and Recreation, the American Public Health Association and other agencies.

(d) Extensive correspondence is carried on with the general public on all these subjects, plus free distribution of a wide variety of pertinent literature. Hundreds of thousands of pamphlets are distributed and almost a hundred thousand letters from the public are answered annually.

(e) Special loan collections are available on nutrition and recreation. These collections are of aid to those who speak to the public on medical subjects.

(f) Experimentally, television health education programs have been prepared and are being tried in the Chicago area.

(g) Hundreds of lectures and presentations are given in many states each year on health and fitness, stressing nutrition and recreation.

(h) Articles on recreation and physical fitness have been published in health journals.

(i) Through representatives who appear at public hearings on pending legislations the support of the American Medical Association is given to suitable legislation designed to aid in achieving essential standards of food, housing, clothing and recreation for all the people.

POINT 2. PREVENTIVE MEDICINE—HEALTH DEPARTMENTS

The provision of preventive medical services through professionally competent health departments with sufficient staff and equipment to meet community needs is recognized as essential in a health program. The principle of federal aid through provision of funds or personnel is recognized with the understanding that local areas shall control their own agencies as has been established in the field of education. Health departments should not assume the care of the sick as a function, since administration of medical care under such auspices tends to a deterioration in the quality of the service rendered. Medical care to those unable to provide for themselves is best administered by local and private agencies with the aid of public funds when needed. This program for national health should include the administration of medical care, including hospitalization to all those who need it but are unable to pay, such medical care to be provided preferably by a physician of the patient's choice with funds provided by local agencies, with the assistance of federal funds when necessary.

Progress.—The Association has been a pioneer in many phases of health education. One of the most important actions was its endorsement in cooperation with the National Health Council in 1918 of the periodic health examination. It publishes the standard manual in this field and furnishes examination blanks. Editorially, through *THE JOURNAL* and *Hygeia*, it has promoted the principles of periodic health inventories to the profession and the public.

In conjunction with the American Public Health Association and the Association of State and Territorial Health Officers, the American Medical Association supports the principle of extending county or district health department service to every area of the United States.

The principles enumerated have been supported through radio network broadcasts, transcriptions and pamphlet publications, as well as through liaison with agencies interested in the same objectives, such as the American Public Health Association and the American School Health Association.

The subject of preventive medicine looms large in daily correspondence and in the distribution of literature, and some of the latter interprets the services of health departments in this field.

There are at least twelve loan collections dealing with preventive medicine, though it might be said that virtually every one of the fifty-five different collections relates to this subject. A loan collection also deals with public health.

Preventive medicine has been interwoven into practically all television programs. The nearest approach to health department activities was the program on the activities of the visiting nurse.

Local public health units have been promoted through health and fitness talks and articles. Representatives have participated in conferences on local health units.

A health and fitness conference was held with federal public health and education agencies in December 1946 to coordinate consultative services in this field.

The Association has promoted the creation of health councils as an effective agency for effectuating health programs. County medical societies are urged to sponsor the organization of a health council.

Joint action has been taken with labor and employer groups in the elaboration of physical examination standards, in many aspects of workmen's compensation coverage and in labor-management cooperation for improved industrial health and safety.

All the available avenues for improvement of industrial medical service have been used—medical schools, general and special medical societies, dental societies, nursing organizations, agencies dealing with industrial hygiene, toxicology and chemistry and the special technical fields of preventive medicine and public health. Reports have been periodically issued describing the objectives of industrial health, the physician's place in industry, the organization of industrial medical departments, the conduct of plant hygiene surveys and many others dealing with specific procedure for industrial physicians and nurses. The Association has assisted in the development of national policies respecting the handicapped, especially those factors which depend on medical management.

Medical relations in workmen's compensation have occupied the attention of the Association. Its range of interest includes proper relations with medical societies, with specialty organizations, with industrial commissions and compensation boards and with the casualty and liability insurance industries. Efforts are being made to contribute to the improvement of administrative standards, simplification of report forms, the establishment of uniform statistical methods, improvement of medical testimony and disability evaluation and the development of far greater correlation between compensation agencies and rehabilitation services.

The Board of Trustees has supported pending legislation for federal aid in the establishment of local health units with emphasis on the principle that medical care and treatment are not properly functions of public health units.

POINT 3. PRENATAL CARE—CHILDBIRTH

The procedures established by modern medicine for advice to the prospective mother and for adequate care in childbirth should be made available to all at a price that they can afford to pay. When local funds are lacking for the care of those unable to pay, federal aid should be supplied with the funds administered through local or state agencies.

Progress.—The Association has furthered these causes through all its press, radio and public information facilities.

An officer of the Association has served as a member of the Advisory Committee to the United States Children's Bureau for nine years.

Periodic health examinations, continuously urged by the American Medical Association, begin with infancy and childhood. This activity, as discussed under Point 2, is a significant contribution by the Association to child health.

Correspondence includes maternity subjects, and thousands of copies of several pamphlets are distributed free.

A loan collection titled *Fundamentals of Prenatal Care* is available.

The health and fitness program includes stimulation of development of courses in home and family living that emphasize education for parenthood.

The Association has cooperated with the American Academy of Pediatrics, the Kellogg Foundation, the National Foundation for Infantile Paralysis, the National Education Association, the American Heart Association and many others toward achieving this objective.

In hearings on legislation tending to improve maternal and child health, representatives of the American Medical Association have supported this principle fully.

POINT 4. INFANT WELFARE—CHILD CARE

The child should have throughout infancy proper attention, including scientific nutrition, immunization against preventable disease and other services included in infant welfare. Such services are best supplied by personal contact between the mother and the individual physician but may be provided through child care and infant welfare stations administered under local auspices with support by tax funds whenever the need can be shown.

Progress.—The Association has contributed to health education of the public on these topics through radio network broadcasts, electrical transcriptions and cooperative relationships with the United States Children's Bureau and the American Academy of Pediatrics and through speakers, through the press and through *Hygeia*.

Correspondence on this subject is voluminous, and there are twenty-seven separate pamphlets available for distribution.

Thirteen loan collections dealing with various aspects of infant and child care are available.

Experimental television programs have dealt particularly with child health. Significant ones have concerned rheumatic fever and orthopedic surgery.

Health and fitness school contacts emphasize the value of immunization as a protection during the infancy and preschool period, discourage postponement of these measures to the time when the child enters school and encourage periodic checkup at appropriate points during advancement in school.

The Association has supported demonstration programs for the detection of tuberculosis, for immunization against diphtheria and for the prevention of Fourth of July injuries. It, in cooperation with the National Safety Council, is now undertaking a campaign to reduce preventable motor accidents.

In cooperation with the American Red Cross the Association has aided in extension of information on first aid and water safety.

The Association is fully supporting establishment of periodic physical examination of school children.

POINT 5. HOSPITALS—HEALTH AND DIAGNOSTIC CENTERS

The provision of health and diagnostic centers and hospitals necessary to community needs is an essential of good medical care. Such facilities are preferably supplied by local agencies, including the community, church and trade agencies, which have been responsible for the fine development of facilities for medical care in most American communities up to this

time. Where such facilities are unavailable and cannot be supplied through local or state agencies, the federal government may aid, preferably under a plan which requires that the need be shown and that the community prove its ability to maintain such institutions once they are established (Hospital Survey and Construction Act).

Progress.—These topics have received appropriate attention in radio network broadcasts, pamphlet publications, electrical transcriptions, television and talks by traveling speakers. The Association participated in the formulation of the federal hospital survey and construction act and advocated its enactment by Congress. It has made a survey of existing health centers, and the information developed will be valuable in formulating plans for construction projects under the federal law.

It has undertaken to stimulate interest in the act on the part of state and county medical societies. Discussion at regional conferences of the various problems involved in putting this act into operation has been arranged. The Association has printed and distributed 18,000 copies of a booklet explaining the federal regulations under this act and suggesting a coordinated hospital system for extension of medical care to rural areas. In the hospital field generally, it has established standards for hospitals that offer internship and residency training to medical school graduates. The institutions meeting these standards are listed annually in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*. The Association has long been interested in the number, distribution and quality of hospital services. It has cooperated at the state level in surveys of existing hospital facilities and in developing plans for needed additional facilities.

Approximately 300 hospitals closely associated with medical schools participate in the instruction of undergraduate medical students; 764 are approved by the Association for intern training; 1,017 hold approval for residencies in specialties; 1,229 maintain accredited schools of nursing education; 191 offer acceptable affiliated courses for nursing education, and 11 conduct approved schools for medical record librarians, 161 for x-ray technicians, 294 for medical technologists, 24 for physical therapists and 18 for occupational therapists.

There are 8,539 internships available in 764 approved hospitals. Great efforts have been exerted to provide opportunities for graduate study for veteran physicians desiring further training before entering practice. The number of approved residencies and fellowships have been increased from 5,256 in 1941 to 12,003 in 1946-1947, an all time peak.

In a related field, the Association has created a committee to study all phases of the nursing situation. It plans to approach the nursing problem on the basis of the number of nurses in the United States at the present time, the number needed, the number of students in nursing schools and the number that should be enrolled. The matter of retirement funds, the economic problem, the curriculums in nursing schools, the question of increasing or lowering standards of nursing and the question of courses for bedside nursing and administrative work also will be considered. The Association has been cooperating with the various nursing agencies and holds representation on the National Nursing Council and the National Association for Practical Nurse Education. It also cooperates with the National League of Nursing Education, the American Nurses Association and other nursing groups. The Board of Trustees has established a Committee on Nursing Problems which is associated with similar committees of the American Hospital Association and the American Nursing Association.

POINT 6. VOLUNTARY PREPAYMENT PLANS FOR HOSPITAL AND MEDICAL CARE

A program for medical care within the American system of individual initiative and freedom of enterprise includes the establishment of voluntary nonprofit prepayment plans for the costs of hospitalization (such as the Blue Cross plans) and voluntary nonprofit prepayment plans for medical care (such as those developed by many state and county medical societies). The principles of such insurance contracts should be acceptable to the Council on Medical Service of the American Medical Association and to the authoritative bodies of state medical associations. The evolution of voluntary prepayment insurance against the costs of sickness admits also the utilization of private sickness insurance plans which comply with the state regulatory statutes and meet the standards of the Council on Medical Service of the American Medical Association.

Progress.—The Association has undertaken the promotion of voluntary prepayment medical care insurance. In this promotion studies have been prepared on the various types of prepayment plans sponsored by medical societies, and in order to stimulate the program there has been created the "Seal of Acceptance" and preliminary standards for granting that "Seal of Acceptance" have been formulated.

During 1947, seven plans or programs in as many states completed organization. This brings the number of states in which programs are in operation to thirty-eight. Plans are in various stages of development in the other ten states and the District of Columbia. Details of some of these proposed plans are almost complete, and some hope to begin operation on or about Jan. 1, 1948.

Enrolment in medical service plans continues to grow—over 6,503,000 as of Sept. 30, 1947—and is still increasing rapidly. The net increase for the first nine months of 1947 is approximately 2,000,000. The rate of growth approximates closely that of the Blue Cross Hospital Plans.

Many plans are now tending to provide a broader coverage, extending benefits to smaller groups or even to individuals, and are carrying the program into the rural areas.

Realizing that there were many details in the business operation of voluntary prepayment plans with which its staff was not equipped to cope, the Association has been instrumental in creating a national organization of the plans themselves. This national organization is a trade association designed to work with the internal problems of prepayment plans.

Recognizing that a single type of plan could not adequately meet the entire prepayment program, the Association has encouraged the development of adequate prepayment insurance coverage by private insurance carriers. Five state medical associations have approved this type of program, and several others are considering it at the present time. All the promotional and publicity facilities of the Association have been used in expanding this program.

The Association actively promotes the extension of medical care to rural communities through prepayment plans and otherwise. It collaborates with the various farm organizations to devise ways and means to attain this objective. It sponsors annual conferences at which leaders of farm groups of the medical profession and other leaders in the health field assemble to explore the problem of rural medical care. It has stimulated the creation of rural health committees by its state and county units.

It has conducted surveys, with the cooperation of state and county medical societies, of the medical facilities and medical personnel in every county of the United States; the information obtained was made available to all medical schools and to all hospitals approved for internships and residencies for the purpose of helping the young physician to choose his place of practice.

A survey of medical schools in 1947 disclosed that many of them have preceptorships with rural physicians for medical students in their senior year, scholarships for students who will practice in rural areas, rotating internships from university hospitals to rural hospitals, extension of medical care from medical schools to rural clinics and other similar projects.

The Association is concerned with the cost of medical care, with the distribution of physicians and with the utilization of their services. Prepayment plans organized and operated by physicians will do much toward lessening personal disaster and suffering occasioned by accident or the onset of disease.

Studies have been made of the medical care available to civilians during World War II by means of a questionnaire survey of thousands of physicians who remained home during the war—those who comprised the 60 per cent of practicing physicians who carried the 91 per cent of the prewar patient load. The results of their efforts? The year of 1942, the first year of heavy inductions, was the healthiest year in the history of the United States up to that time. The purpose of the study was to determine if even better results may be obtained in event of another national emergency.

A similar study has been made of the utilization of medical personnel by the armed forces during the war, conducted by questionnaires sent to all medical officers discharged before

Dec. 31, 1946. This study summarizes the opinions and constructive criticisms made by the nation's wartime medical officers. The results of this survey will be of great value in assisting the Department of National Defense to plan its medical policies for the future of the entire national defense establishment in peace, in preparedness and in war.

The first really definitive study of the supply of physicians in the United States is being carried out by the Association.

This study is not based on the outdated concept of numbers of physicians and persons in each county, but rather seeks to group all physicians with their patients into the naturally formed service areas that, in fact, develop about each center at which physicians' services are available. Thus for the first time will it be possible to state exactly the ratio of physicians to population for each part of the United States—and to do it without the constrictions of economically unrealistic political boundaries. It will be known for the first time where physicians are, where their patients are and how many of each are to be found in each medical service area. Each part of the United States will fall into some one of these medical service areas, and it will be on differences found to exist between these areas that true reforms in distribution of medical care will be founded.

Foreseeing a growing demand for more integration and organization in the supply of medical services, the Association is conducting a far reaching study into the implications of group medical practice. In this study it is accepted as a basic premise that organization in medical care presents problems other than those of medical care alone. The study visualizes "group medical practices" as, in part, separate business firms to be studied in the light of success or failure as business firms. For this reason, great attention is being paid to discovering the reasons for the disappearance of so many of the group medical practices which sprang up in recent years. Through learning the reasons for failure, it will be easier to provide guides for successful operations for other and for new groups.

The American Medical Association has contributed largely of its own funds in furthering the objective of widespread voluntary insurance against the costs of sickness and hospitalization.

POINT 7. VETERANS' NEEDS FOR HOSPITAL AND MEDICAL CARE

A program for national health should include the administration of medical care, including hospitalization, to all veterans, such medical care to be provided preferably by a physician of the veteran's choice, with payment by the Veterans Administration through a plan mutually agreed on between the state medical association and the Veterans Administration.

Progress.—The Association has followed closely the development of the Veterans Administration Home Town Medical Care Program. At the present time over thirty-five state medical associations are working with the Veterans Administration in providing this free choice of physicians program to the veterans. In practically all the Association's regional conferences the various participating state medical associations have been given an opportunity to discuss problems arising under the program with representatives of the Veterans Administration.

A special committee on Veterans' Affairs has been created to study problems that may arise and to confer with representatives of both the state medical associations and the Veterans Administration. A National Conference on the Veterans Administration Home Town Medical Care Program was sponsored by the Association in November 1947. Representatives of thirty-five state medical associations, the various specialty groups, the Veterans Administration and the American Medical Association participated in this conference. The Veterans Administration is concerned with the continued medical and hospital care of the men and women who served in the armed forces and is making every effort to improve the quality of medical and hospital care. To this end the Veterans Administration sought the cooperation of the faculties of the medical schools. To date sixty-five Veterans Administration hospitals are affiliated with medical schools and have been approved for the training of resident physicians by the American Medical Association. These institutions with two hundred fifty training programs provide at the present time opportunities

for the training of 2,100 resident physicians. The Association has cooperated closely with the Veterans Administration on its program of research on the effects of streptomycin in tuberculosis. Early publication of the results of the studies made by the Veterans Administration was secured, thus enabling the entire medical profession and the public to benefit immediately from the important conclusions reached by the physicians in charge of the care of tuberculous veterans.

The Council on Medical Education and Hospitals has inspected veterans' hospitals and approved internships and residencies.

The Association has aided the work of the Committee on Veterans Medical Problems of the National Research Council and has extended research in veterans' hospitals.

POINT 8. RESEARCH FOR ADVANCEMENT OF MEDICAL SCIENCE

Research for the advancement of medical science is fundamental in any national health program. The inclusion of medical research in a National Science Foundation, such as proposed in pending federal legislation, is endorsed.

Progress.—The American Medical Association sponsors research in a variety of ways; in fact, practically everything that it does encourages research or the use of knowledge gained from research. It disseminates through its scientific publications the results of such research or lists the research projects in its *Quarterly Cumulative Index Medicus*, which is the source of reference for scientists engaged in gathering material to serve as the basis of scientific projects and arguments, and which is used by readers to advance their information in the field in which they are interested.

The Association examines drugs, foods and devices and similar preparations to determine their efficacy, and when this is wanting makes suggestions for further research to show the true usefulness of the product under consideration. It maintains a laboratory to test the preparations submitted for consideration. One of the important aspects of this unit is concerned with the development of new tests and standards by which products can be identified and controlled. When new products are placed on the market, there is no control except that set forth by manufacturers. When these products are submitted to the Association, tests and standards are devised which later are usually picked up with slight modification by the United States Pharmacopoeia, which is recognized as an official compendium under the provision of the Federal Food, Drug and Cosmetic Act.

The Association has created three special committees which have medical research functions. One is designed to bring together a new idea from an individual or group of individuals and research workers who are qualified to investigate that idea. For example, a firm might produce a new treatment for tuberculosis or some one else might devise a new method of approach to the problem of poliomyelitis, arthritis or rheumatic fever. This committee will arrange for research and undertake to contact the experts in this country, to organize the program and to see that it is most expeditiously conducted with the expenditure of a minimum of time and money. This committee has participated in a collaborative Study of Steroids and Cancer initiated by it, which represents a voluntary coordinated attack on the problem of cancer with participation by the general medical profession, government agencies, pharmaceutical manufacturers and the Association. Through the efforts of the committee, medical scientists in all parts of the country are being encouraged in their research, and an attempt is being made to bring support to scientists in institutions for which such support has been inadequate or lacking. At the request of the National Foundation for Infantile Paralysis, Inc., this committee undertook to explore the feasibility of conducting certain critical investigations on the treatment of poliomyelitis and to design an experiment to test certain hypotheses. It is cooperating with the American Red Cross in its research on blood and blood derivatives.

A second committee makes available funds for research purposes (this year about \$10,000; normally around \$15,000). The grants are small, usually amounting to several hundred dollars and seldom over \$1,000 or \$2,000. They are given to persons working on therapeutic problems in medical schools and elsewhere who need help to underwrite part of their

problem. Over six hundred such grants have been given through this committee since it was organized in 1911.

A third committee also makes available funds for scientific research on a somewhat broader basis than that under which the second committee functions. During 1946, sixteen grants ranging from \$250 to \$2,600 were made. During the year, work was in progress on twenty-four projects for which grants had been made in previous years, and grants were closed on an additional ten research projects.

In 1947 the Board of Trustees established a trust fund in the amount of \$1,500,000, the interest from which will be used each year to support medical research.

The Association stimulates fundamental research and clinical investigation in industrial medicine and surgery, industrial hygiene, sanitation, medical administration and other disciplines dealing with occupational health.

The Association makes available exhibits for scientific and lay groups, for medical and other organizations—exhibits which range from the value of early diagnosis of cancer to the latest treatments for tropical diseases. The scientific exhibits at the annual and interim sessions of the American Medical Association are part of the highlights of these sessions. The exhibits that are made available on loan to state medical associations, county medical societies, women's auxiliaries, local health organizations, the Veterans Administration and other groups are extremely popular, and their popularity reflects their value.

Much research is done in medical schools, and the Association promotes that research by stimulating the schools to maintain high standards. The last comprehensive survey of medical education in this country was that conducted by the Association during the period 1934-1936. This report proved to be of great value. The Association is sponsoring a resurvey of medical education in cooperation with the Association of American Medical Colleges. The objectives of the study are: (a) improving medical education to better meet the overall needs of the American people for (1) the prevention of disease, (2) the restoration, as far as possible, to health of all those who suffer illness or injury and (3) the maintenance of the best standards of physical and mental health of all the people; (b) assessing the degree to which medical schools are meeting the needs of the country for physicians; (c) promoting the advancement of knowledge in the field of medical science, and (d) better informing the public concerning the nature, content and purposes of medical education.

An important aid to the physician who desires to keep abreast of the progress of medicine is the offering of continuation courses throughout the country. This type of training is offered in variable periods from a few days to several months. Some are concentrated full time courses and others are part time. In thirty-three states and the District of Columbia some form of continuation study* for practicing physicians was provided during 1946-1947. The total attendance numbered 59,811, which represents the greatest number to seek such opportunities in a single year. The listing of these opportunities is published semiannually by the Association. The last listing included more than eight hundred courses.

Programs have been initiated in seven states providing for state scholarships for medical students who, on completion of their training, agree to practice medicine in a rural community of the state. In Indiana, Illinois and Kentucky the rural medical scholarship fund was created by a statewide campaign sponsored by the state medical associations.

The Association has waged a constant battle against antivivisectionism, antivaccinationism and the antiscience movement in general through its radio network broadcasts, electrical transcriptions, television programs, pamphlet publications and speakers.

It has frequently analyzed and refuted the claims of antivivisectionists and is actively cooperating with the National Society for Medical Research, and it has always cooperated with medical schools and other research agencies in defense of the use of animals for medical research under appropriate regulations, which insure humane treatment of laboratory animals.

Through health education, the Association has endeavored to establish and promote scientific thinking on the part of

the public as a broad base for appreciation of medical science and its progress through medical research.

This interpretation has likewise been carried out through radio network broadcasts, electrical transcriptions, pamphlet publications, Question and Answer correspondence and traveling speakers.

Loan collections in which advancement of medical science is emphasized include those on alcohol and tobacco, anesthesia, deafness and hearing aids, heredity and eugenics, narcotics, superstitions, outstanding medical advances and progress in preventive medicine.

Representatives of the Association participate in the activities of many foundations, health organizations and similar groups which extend medical research.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION promotes research in articles and editorials and aids in developing funds for research.

POINT 9. VOLUNTEER HEALTH AGENCIES— PHILANTHROPIC FUNDS

The services rendered by voluntary philanthropic health agencies such as the American Cancer Society, the National Tuberculosis Association, the National Foundation for Infantile Paralysis, Inc., and by philanthropic agencies such as the Commonwealth Fund, the Rockefeller Foundation and similar bodies have been of vast benefit to the American people; and are a natural outgrowth of the system of free enterprise and the democracy that prevail in the United States. Their participation in a national health program should be encouraged, and the growth of such agencies when properly administered should be commended.

Progress.—The Association has always cooperated with the voluntary agencies. When the National Tuberculosis Association, now the most powerful and heavily financed of these organizations, was in its infancy, its publications were issued jointly with the American Medical Association and were printed by the American Medical Association. Leading members of the Association have played leading parts in the organization and development of voluntary agencies.

The Association, with the National Education Association, organized the Joint Committee on Health Problems in Education, which constituted a pioneer in health education. This committee publishes the standard textbook in that field, entitled "Health Education," and numerous other pamphlet publications, as well as contributions such as symposiums at the annual meetings of the National Education Association, Association of School Administrators, the Association for Health, Physical Education and Recreation and the American Medical Association's own meetings.

Personnel of the Association now are, or have been, consultants to, or members of, advisory committees for the following organizations:

- The President's Highway Safety Conference
- The American Red Cross Advisory Committee
- The American Red Cross Home Safety Commission
- 1942 Yearbook Commission—American Association of School Administrators
- United States Children's Bureau
- United States Public Health Service
- Office of Price Administration Committee on Health Aspects of Fuel Rationing
- American Public Health Association
 - Governing Council
 - Subcommittee on Accident Prevention
 - Committee on Professional Education
 - Secretary and Chairman of Health Education Section
 - Consultant on Merit System Unit
 - School Health Section
 - Public Health Film Committee
- American Cancer Society—Health Education Committee
- Chicago Council on Social Service Agencies—Health Committee
- National Organization for Public Health Nursing—Consultant
- National Safety Council
- The American Camping Association—Consultant
- United States Indian Service—Consultant
- United States Department of Commerce
 - Accident Prevention Conference
- National Congress of Parents and Teachers
 - Committee on Health and Summer Round-up
- National Committee on Boys' and Girls' Club Work (4-H)
- American School Health Association, Governing Council
- American Association of Teachers Colleges, Committee on Standards and Surveys
- Joint Committee on Planning for the Chronically Ill
- National Research Council, Subcommittee on Tuberculosis
- American Student Health Association, Governing Council
- Illinois State School Health Committee on Personal Hygiene

- American Association for Health, Physical Education and Recreation
- Committee on Standards for Interscholastic Athletics
- National Conference for Cooperation in School Health Education
- American Film Center, Committee on Public Health
- National Health Council, Committee for Study of Voluntary Health Agencies
- General Federation of Women's Clubs
- American Heart Association
- American Conference on Rheumatic Fever
- National Foundation for Infantile Paralysis

The Association has worked with representatives of the American Hospital Association, the American Public Welfare Association and the American Public Health Association in developing a program for the chronically ill. Realizing that the problems of the chronically ill will undoubtedly increase as the average age of the population increases, these three associations, together with the American Medical Association, are attempting to evaluate the situation and to lay plans for its solution.

Representatives of the American Medical Association have served on advisory boards of the medical departments of the Army, the Navy, the Federal Security Agency, the United States Public Health Service, the National Foundation for Infantile Paralysis, the Children's Bureau, all the various educational associations, all the associations of technical specialties allied to medicine and the American National Red Cross, as well as local and state agencies. The publication facilities and expert personnel of the Association have been lent freely and for considerable periods of time to practically every important agency in any way related to health.

Recent activities include committees to cooperate with the National Tuberculosis Association, the American Public Health Association and the United States Public Health Service in establishing minimum standards for the detection and prevention of tuberculosis and for educating the public on this subject. The Association has endorsed international conferences on tropical disease, infantile paralysis and children's diseases, and in many other ways has extended the influences of American medicine throughout the world. Most recent activities are cooperation in establishing the World Medical Association with representation by the American Medical Association at the organization of this body in Paris, France, and with the establishment of the headquarters office of the World Medical Association in New York. A United States Committee of the World Medical Association has been established to extend the accomplishments of American medicine throughout the world.

POINT 10. HEALTH EDUCATION IN PREVENTION OF DISEASE

Fundamental to the promotion of the public health and the alleviation of illness are widespread education in the field of health and the widest possible dissemination of information regarding the prevention of disease and its treatment by authoritative agencies. Health education should be considered a necessary function of all departments of public health, medical associations and school authorities.

Progress.—The Association has not been a laggard in the field of health education but has been a pioneer. It has continuously expanded and augmented its program of health education through the following principal mediums:

- Hygeia, the Health Magazine*, established in 1923
- Radio broadcasting begun in 1925
- Electrical transcriptions started in 1943
- Health and Fitness programs started in 1946
- Television programs started in 1946

The Association, together with the National Health Council, endorsed the principle of periodic health examinations and, with the exception of commercial insurance companies, has been the only national organization to continue active sponsorship and promotion of that concept.

As this is a basic activity, it is represented in every phase of question and answer service, loan collections and television programs. Special material intended for teacher-pupil use is included among the literature available.

Health and Fitness activities in this connection have included:

Sponsoring of Conference on the Cooperation of the Physician in the School Health and Physical Education Program, October 1947, including representatives of health departments, education departments, medical societies and education associations from thirty states and one territory and representing ninety agencies.

Providing consultation services at working conferences in Arizona, Florida, Illinois, Louisiana, Minnesota, Missouri, New Jersey, Texas, Utah, Virginia and Wisconsin.

Providing consultation services at National Conference on Health in Colleges, May 1947, and at national meeting of American Association for Health, Physical Education and Recreation, April 1947.

Editing of Recommendations for the Health Appraisal of School Children and assisting in preparation of report "Health Education" for Joint Committee on Health Problems in Education.

Service on twelve national committees related to health and health education such as the Committee on Standards and Surveys of American Association of Teachers Colleges, School Health Section Council of the American Public Health Association, Committee on Standards for High School Athletics.

Publication of articles on health and fitness in ten periodicals such as *National Parent-Teachers*, *Hygeia* and the *Journal of Health and Physical Education*.

Answering of 2,500 letters a year on school health problems from teachers, physicians and school officials.

The Association issues each week to some 2,000 periodicals and newspapers a release from the publications of the American Medical Association to inform the public on the progress of medicine.

Members of the headquarters staff contribute to innumerable public periodicals, and the headquarters office constantly reads and considers articles for the education of the public in health prepared by other agencies. Representatives of the Association advise other agencies in the techniques of education of the public in health and in the prevention of disease, many of which techniques were first developed in the headquarters of the Association.

Exhibits prepared by the American Medical Association are developed and lent to many other agencies. The association has prepared some motion pictures and cooperates with many other agencies in the preparation and dissemination of most pictures related to the prevention of disease.

Hundreds of addresses are given annually by members of the official bodies and staff of the American Medical Association to clubs and societies and other groups.

The Woman's Auxiliary to the Association participates in health activities of innumerable women's clubs and parent-teacher associations and similar agencies and extends widely the work of health education.

The Association has urged (1) extension of education on health to schools in every grade and (2) recognition of health education as a subject to be assigned credit for accomplishment as with other major subjects. Literally millions of books and pamphlets prepared by the American Medical Association to aid the public in health education have been distributed. *Hygeia* is the most widely quoted health magazine in the world, and its material has been extended most widely not only to all digest magazines, newspapers, radio stations and similar agencies in the United States but to Canada, South Africa and Australia and to foreign language publications in Chinese, Hindustani, French, German, Spanish, Italian and the Scandinavian languages.

In approving the foregoing account of progress made by the American Medical Association in achieving the objectives of its Ten Point National Health Program, the Board of Trustees recommends the following additional activities:

In order to bring the best possible medical care to the American people the Association must:

1. Increase public health and preventive medicine facilities so that the whole country is covered, thereby reducing the incidence of illness and the need for medical care. This will require joint health departments for poorly populated counties and will in some instances require federal grants-in-aid.

2. Provisions for prenatal care, childbirth, infant welfare and child care must be expanded in some areas, again with federal grants-in-aid to assist in the cost, the administration to be on a local basis.

3. Hospitals and diagnostic facilities must be expanded along the lines provided in the Hill-Burton bill, so that all will have these facilities. This will make it possible to give better care and will attract physicians to areas now lacking them. It should be borne in mind that mere appropriation of money is not sufficient. The money available under the Hill-Burton Act is not being fully used because of a lack of materials and labor. Further, the doctors, nurses and technicians must be available to make these units function.

4. Before considering insurance, it must be remembered that as far as medical care is concerned there are four economic groups to consider: (a) those who are sufficiently well off financially to care for themselves under any conditions, no matter how prolonged or costly the illness; (b) those who are sufficiently well off financially to care for themselves under all conditions except prolonged or costly illness; (c) those who can care for themselves under ordinary circumstances, but who find it difficult to meet the cost of any illness, and (d) those who are wholly dependent on the public welfare for even their housing, clothing and food.

Economic group *a* does not require action.

Group *d* is well cared for on a charity basis in most areas, but certain better arrangements must be made in a few areas. The problem here is a social one of raising the economic level of the group rather than a medical one.

It is group *b* that voluntary insurance will cover satisfactorily as to both hospitalization and medical care. Both types of insurance are expanding rapidly, and there is no reason to believe that they will not meet the needs of this group. While this insurance is available largely on a group basis, it apparently is not clearly understood that one can form groups in different ways. For example, a person may form a group among his neighbors.

It is group *c* for which further provision is needed.

One way of solving this problem would be that outlined in Senate Bill 545. The American Medical Association has not endorsed this bill in toto but has approved it in principle. The bill provides that the federal government shall allot funds to states for expenditures under their regulations, subject to federal control only as to the general plan.

This bill provides that this money will be available if a state sets forth a statewide program designed and calculated to provide within five years: (a) hospital services, surgical services and medical services for all those families and individuals in the state having insufficient income to pay the whole cost of such; and (b) periodic physical examinations for all children in elementary and secondary schools in the state.

Such program may, at the option of the state, provide medical care services in one or more of the following ways: In institutions, in the home or in physicians' offices. This program may also provide for the furnishing of these services to such families and individuals by means of payments (in the nature of premiums or partial premiums or reimbursement of expenses or otherwise) by the state to any voluntary health, medical or hospital insurance fund, or other fund operated not for profit, in behalf of those families and individuals unable to pay the whole cost of such services or insurance therefor. Such program shall provide for the collection of proper charges of less than the total cost of such services from persons who are unable to pay in whole but who are able to pay in part therefor. Such program may include and take account of services rendered or to be rendered by governmental subdivisions of the state and by private organizations operating not for profit, and may provide for the payment to such institutions by the state or subdivision for care to such families and individuals. Such program may also include payments to physicians practicing in areas which, without such payments, would be unable to provide sufficient income to attract a practicing physician.

The total amount necessary for this purpose is not known. S 545 provides for an appropriation of \$200,000,000 a year. This may be sufficient but probably will not be. The exact amount will have to be determined finally after experimentation. In setting the level for assistance, local areas must make the decision.

Furthermore, any program must start slowly and develop slowly, so that the facilities necessary—such as doctors, nurses, technicians and hospitals—will be trained or established to keep pace with the demands of the program. The problem cannot be solved by the stroke of a pen.

Finally, any program, no matter how perfect, will become ineffective with increasing inflation.

PUBLIC RELATIONS PROGRAM

Knowing the interest of this House of Delegates in the public relations program of the American Medical Association at this time the Board of Trustees wishes to tell the House that it has employed a consultant and an executive assistant to Dr. Lull in charge of public relations and also to introduce these gentlemen to the House.

INTRODUCTION OF MR. THEODORE R. SILLS

Mr. Theodore R. Sills is head of Theodore R. Sills and Company, public relations firm, which has been retained by the American Medical Association as counsel. His offices are in Chicago and New York. Mr. Sills is coauthor of the book "Public Relations—Principles and Procedures." He was formerly president of the Chicago Chapter of the National Association of Public Relations Counsel and is now vice president of the national organization. He handled public relations for the steel companies in the Little Steel case that led to the Little Steel Formula. He has directed public relations for the American Dental Association, the American College of Radiology and

many large corporations such as Inland Steel Company, Brunswick-Balke-Collender Company, Sunshine Biscuits, Inc., and for refrigeration, air-conditioning and radio manufacturers, the American Bakers Association and others.

ADDRESS OF MR. THEODORE R. SILLS

Thank you very much, Dr. Henderson. We are very happy to be associated with the American Medical Association, and we are looking forward to working with you and your public relations director, Mr. Lawrence W. Rember, in helping solve your public relations problems successfully.

INTRODUCTION OF MR. LAWRENCE W. REMBER

Dr. E. L. Henderson, Chairman, Board of Trustees, introduced Mr. Lawrence W. Rember as the newly appointed executive assistant to Dr. Lull in charge of public relations, a man who brings considerable experience, education and training to his position in the American Medical Association.

Mr. Rember directed public relations nationally for the Blue Cross plan of the United States and Canada. He served as public relations director for seventeen states for the American National Red Cross.

Recently he was assistant general manager of the Public Relations Nutrition Agents, representing twenty-eight national and regional trade associations in the food field.

He served five years with a newspaper and two years with a national advertising agency. He was graduated with honors at the University of Wisconsin with a bachelor of arts degree, and at Northwestern University with a master's degree in science.

Mr. Rember supplemented this education in arts and sciences and professional journalism, advertising and public relations by teaching at the Henry W. Grady School of Journalism at the University of Georgia. He is director of the Chicago Chapter of the National Association of Public Relations Counsel. The Board takes pleasure in presenting Mr. Rember.

ADDRESS OF MR. LAWRENCE W. REMBER

Mr. Speaker and Members of the House:

It is a privilege and a challenge to me to be associated with the American Medical Association. I say this because I believe genuinely that the American doctor, American medicine and the American voluntary way will solve economic and social problems.

I assure you that when we can be of any service to you and your societies at national headquarters, we want you to call on us.

INTRODUCTION AND ADDRESS OF MR. JOHN BACH

Dr. E. L. Henderson, Chairman, Board of Trustees, reported that Mr. John Bach, who has been with the American Medical Association for several years, has been doing some excellent work in public relations. Mr. Bach, will you stand? Most of you know Mr. Bach. He has been with us in the press room at our sessions for a number of years.

Mr. John Bach spoke as follows: Gentlemen: It has certainly been a pleasure working for the last several years in building up the press relations of the American Medical Association. We still have a way to go. If we have the cooperation of all you doctors, we will certainly do the best we possibly can.

Dr. Henderson reported further that the Board of Trustees realizes that a great number of the delegates have felt that it has been dilatory in public relations. The Board has spent a great deal of time investigating various organizations and various men endeavoring to get the proper set-up for the public relations of the American Medical Association, and the Board believes and hopes that this has now been accomplished.

Presentation and Address of Dr. T. C. Routley

The Speaker introduced Dr. T. C. Routley, secretary of the Canadian Medical Association, who addressed the House as follows:

Mr. Speaker, Mr. President, Ladies and Gentlemen:

I see that you are just as human as people are elsewhere. The first thing you do is pass a rule, and then you break it.

I must confess, however, Mr. Speaker, that I feel distinctly honored in this unique opportunity which has been given to me to be the first one to break that rule.

I would be guilty indeed of transgression if I spoke to you at any length, but I cannot resist the temptation while here of saying one or two things to you.

You have heard from your officers of your participation in the work of the World Medical Association.

Mr. Speaker, I should like to underline the words I am now about to use. One hundred and twenty-five delegates from forty-eight nations met in Paris in the month of September. This great body was represented by four delegates: Drs. Henderson, Bauer, Irons and Sensenich. They will forgive me, I am sure, if I say that they proved to be four outstanding medical statement.

There were occasions in Paris, trying moments, when patience, tolerance, long suffering and vision were required. These men exemplified those qualities in a high degree, and it was largely because of these men that we came away from Paris with the structure of a World Medical Association which some of us believe may mean much to the future welfare of this world.

I think all mankind craves two things: Opportunity, and ability to discharge the obligations which that opportunity presents. Ladies and gentlemen, world medicine today gives that opportunity, and this great American Medical Association is going to demonstrate to the rest of the world what is meant by the American way of life. You are going to prove to the rest of the world that man can give without immediately looking for a quid pro quo.

You are going to show the outer ramparts of the world that you come bearing gifts, gifts which are calculated to assist all mankind to attain the highest possible level of health.

Incidentally, you are going to do much to promote world peace. This is the day of the atomic bomb versus man's humanity to man. We in medicine surely stand, as the ministry of healing, for that great thing in life of helping mankind to live, not to die.

I am thrilled, Mr. Chairman, to be associated with such a group of people. We are opening our office of the World Medical Association in the city of New York in March of this year.

We are not at the moment in a position to tell you the name of our full time executive secretary, but I can assure you that when that name is announced it will come with great pride and pleasure to this body.

In a final word, Mr. Chairman, which I should have said at the outset, I bring you greetings from your brethren in medicine in Canada, and I say to you that your way of life and our way of life marching along together perhaps will demonstrate to the world what we mean when we say we should like mankind to endure in peace and harmony.

Introduction of Four Canadian Physicians

Dr. T. C. Routley, Secretary, Canadian Medical Association, introduced four Canadian physicians who stood up to be recognized as their names were called: Dr. A. D. Kelly, assistant to Dr. Routley; Dr. H. S. Dunham, secretary of the Interior Division; Dr. C. C. White, president of the Ontario division of the Canadian Medical Association, and Dr. Victor Johnson, a general practitioner from Lucknow, Ontario, Canada.

Motion to Recess

It was moved by Dr. Thomas K. Lewis, New Jersey, seconded by Dr. Thomas M. D'Angelo, New York, and carried, after discussion, that the House recess until 2:30 p. m., at which time it would go into executive session.

Tribute to Dr. C. W. Roberts and Dr. Holman Taylor

Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, requested the Speaker to ask the members of the House to stand for a minute in tribute to the memory of Drs. C. W. Roberts and Holman Taylor, deceased. The Speaker so requested the House, whose members stood in silent tribute for one minute.

Resolutions on Exposing Activities of Certain Employees of the Federal Government in Efforts to Socialize Medicine

Dr. Clark Bailey, Kentucky, presented by title resolutions complimenting the Subcommittee of the Congress of the United States in exposing activities of certain employees of the United States government in their efforts to socialize medicine. The resolutions were referred to the Reference Committee on Executive Session.

The House recessed at 12:30 p. m. to reconvene at 2:30 p. m.

Executive Session

The House of Delegates met in Executive Session in the Euclid Ballroom of the Hotel Statler, Cleveland, being called to order at 2:45 p. m. by the Speaker, Dr. R. W. Fouts.

The Speaker announced that at the Atlantic City Session in June 1947 there had been adopted the report of the Reference Committee on Reports of Officers, reading "your reference committee makes the recommendation that only members of the House of Delegates as defined in article 5, section 2, and the general officers as defined in article 6, section 1, of the present Constitution and By-Laws shall be present at an executive session. The House, by a two-thirds majority, may, however, invite to be present any individual who in its judgment might assist in the deliberations." He then read to the House article 5, section 2, and article 6, section 1, of the Constitution concerning the composition of the House of Delegates and the general officers of the Association.

The Sergeant at Arms reported that it was his belief that all those in the House were entitled to remain.

Report of Reference Committee on Medical Service

Dr. E. S. Hamilton, Chairman, presented a portion of the report, with the statement that it also had the approval of the Reference Committee on Executive Session, the members of which had examined it and suggested that it be submitted in Executive Session. This section of the report of the Reference Committee, as follows, was adopted on motion of Dr. Hamilton, seconded by Dr. Thomas A. Foster, Maine, and carried after discussion:

PROGRESS REPORT OF COUNCIL ON MEDICAL SERVICE

Your Reference Committee has reviewed the progress report of the Council on Medical Service for the Interim Session of the House of Delegates and wishes to commend the Council for its continued activities and progress in this regard. It wishes particularly to comment on two portions of the report:

1. *Washington News Letter*.—It is the opinion of the Reference Committee that this should be presented in a more interesting and attractive form. In all probability at present it is not reaching the physicians who need it the most, and if its distribution could be increased to include local physicians, the Committee thinks that it would be of greater value.

2. *Prepayment Medical Care Plans*.—Your Reference Committee read with great interest the report of the extension of voluntary prepayment medical care plans and wishes to commend the Council for its activities in this regard.

It is the opinion of your Reference Committee that certain conditions have arisen within the last few months which are of vital importance in the continuation of the voluntary prepayment medical care plans, and it feels that it would be well for the Council on Medical Service to render to the House of Delegates a concise report of what has occurred and what effect, if any, these developments will have on the future work of the Council on Medical Service. Your Committee would like the following information: (1) the position of the Council relative to approving plans other than those sponsored by nonprofit groups; (2) recent rumors of proposed developments relative to the affiliation of the Blue Cross and the Associated Medical Care Plans under the direction of Dr. Hawley, and (3) plans for future

activities of the Council in regard to the furtherance of voluntary prepayment medical care plans of all kinds.

At this time your Reference Committee thinks it proper to recommend that the House of Delegates reinstruct the Council on Medical Service to continue to correlate and extend voluntary prepayment medical care plans in all phases as rapidly as possible throughout the United States to cover as large a percentage of the population as possible, particularly the low income group, in the shortest possible time.

Respectfully submitted,

EDWIN S. HAMILTON, Chairman.
RAYMOND L. ZECH.
C. B. CONKLIN.
RALPH T. B. TODD.
EDWARD H. MCLEAN.
IVAN FAWCETT.

Report of Reference Committee on Executive Session

Dr. Albert F. R. Andresen, Chairman, presented the following report, which was adopted on motion of Dr. Andresen, seconded by several, and carried:

The Committee has carefully considered the resolution of Drs. Clark Bailey and J. B. Lukens, of Kentucky, complimenting the Subcommittee on Expenditures of the Congress of the United States in exposing activities of certain employees of the United States government in their efforts to socialize medicine, and with the addition of one word has unanimously recommended that the resolution be approved by the House of Delegates at its Executive Session. The resolution now reads as follows:

WHEREAS, Last July there was printed a report of the Subcommittee on Expenditures of the House of Representatives of the Congress of the United States whereby it was revealed that certain employees of the United States government had vigorously headed a program whereby an organized nationwide effort was being made to cause the people of this country to accept the idea of compulsory health insurance as proposed in the Wagner-Murray-Dingell Bill; therefore be it

Resolved, That the House of Delegates of the American Medical Association commend the action of this committee in exposing the activities of those government employees who would destroy medicine as we know it and the ideals which we as members of the American Medical Association and all patriotic citizens have upheld; and be it further

Resolved, That we congratulate this committee for its efforts in upholding the ideals of democracy and request that a copy of these resolutions be sent to it.

Respectfully submitted,

ALFRED F. R. ANDRESEN, Chairman.
STEPHEN E. GAVIN.
PATRICK E. GEAR.
RALPH B. EUSDEN.
FRED H. MULLER.
JAMES L. WHITEHILL.
HUGH P. SMITH.
GEORGE P. JOHNSTON.

Tuesday Afternoon

On motion of Dr. Mather Pfeifferberger, Illinois, seconded by several and carried, the House rose from Executive Session at 4:25 p. m., to meet immediately in general session.

Report of Reference Committee on Medical Service

Dr. E. S. Hamilton, Chairman, presented the following report, which was adopted section by section and as a whole on motions of Dr. Hamilton, duly seconded and carried after discussion:

1. *Resolution on Proper Integration of Training of Nurses*.—Inasmuch as this problem is now under consideration by the Interim Committee, which has made a preliminary report and will make a final report in June 1948, this resolution is referred to that committee, with a recommendation that it study it further.

2. *Report of Committee on Rural Medical Service*.—After a careful review of the report in the brochure presented by the Committee on Rural Medical Service, your Reference Committee wishes, at this time, to commend this work. It is astounded

at the extent of the work and the active cooperation that is being given in all the states of the nation and wishes to recommend that this work be continued and expanded as the committee sees fit.

Again your reference committee wishes to commend the Committee on Rural Medical Service for a magnificent piece of work.

3. *Resolutions on Red Cross Blood Program*—Your Reference Committee recommends to the House of Delegates continued approval of the "approval in principle resolution" passed in June 1947 in regard to the establishment of blood banks by the American Red Cross, provided that the American Red Cross accept the following principle: To insure safety to recipients, the responsibility for technical details must rest on properly trained personnel under the control of local or state medical societies.

The Committee further recommends that the American Red Cross be asked to accept a permanent committee from the American Medical Association to coordinate the medical work of the Red Cross.

Respectfully submitted,

EDWIN S. HAMILTON, Chairman.
RAYMOND L. ZECH.
C. B. CONKLIN.
RALPH T. B. TODD.
EDWARD H. MCLEAN.
IVAN FAWCETT.

Presentation and Address of Dr. Archer C. Sudan

Dr. E. L. Henderson, Chairman, Board of Trustees, presented to the House Dr. Archer C. Sudan, the first recipient of the General Practitioner Medal, who spoke as follows:

Mr. Speaker and Members of the House of Delegates:

I am glad for the opportunity to express my deep appreciation for the extreme honor that you have conferred on me. At the same time I have in my heart a feeling that there are many thousand other general practitioners who are equally as deserving of this honor. In receiving it, it is with a feeling that I do so for all of those.

I should like to say that some of my friends, I am informed, have arranged a little reception to which all the members of the Board of Trustees and the House of Delegates are invited. I should like the opportunity to shake the hands of as many of you as possible.

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Mather Pfeifferberger, Illinois, and carried, the House adjourned at 4:35 p. m.

World Medical Association

The General Assembly of the World Medical Association, which met in Paris, France, in September 1947, decided to locate the head office of the association in North America and authorized the chairman of the council, Dr. T. C. Routley of Canada, and Dr. Louis Bauer of New York, council representative from the American Medical Association, to select the site, subject to the approval of the American and Canadian medical associations. After careful consideration, it has been decided to locate the office in New York, in excellent quarters which have been secured in the building of the New York Academy of Medicine at 2 East 103d Street.

The council will meet in New York on April 26, 27, 28 and 29, 1948, at which time it is expected that the new quarters will be available.

Following the meeting of the council, the members will be guests of the American Medical Association, the Mayo Foundation, the University of Minnesota and several other universities for a ten day tour which will take them as far west as Minneapolis.

Official Notes

CHANGE IN FELLOWSHIP DUES AND SUBSCRIPTION TO THE JOURNAL

This is to notify all concerned that the House of Delegates at the Cleveland Interim Session, Jan. 6, 1948, increased the annual Fellowship dues and subscription to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION to \$12 effective Jan. 1, 1948.

CENTENNIAL RECORDINGS

Phonograph recordings of the sermons delivered by Monsignor Fulton J. Sheen, Dr. Joshua Loth Liebman and Rev. Ralph Cooper Hutchison at the Atlantic City Centennial session of the American Medical Association have been made available by the Bureau of Health Education. The sermons, contained in three records that are packaged in a special album, may be obtained from the Order Department on remittance of \$6. A pamphlet containing reproductions of the sermons as they appeared in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION is available free of charge for single copies from the Bureau of Health Education.

Coming Medical Meetings

Annual Congress on Medical Education and Licensure, Chicago, Palmer House, Feb. 9-10. Dr. Ronald G. Anderson, 535 North Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Chicago, Palmer House, Feb. 6-7. Dr. F. S. Crockett, 535 N. Dearborn St., Chicago 10, Chairman.

American Academy of Orthopaedic Surgeons, Chicago, Palmer House, Jan. 24-29. Dr. Harold B. Boyd, 869 Madison Ave., Memphis, Tenn., Secretary.

American College of Allergists, New York, Hotel Pennsylvania, March 12-14. Dr. Fred W. Wittich, 423 LaSalle Medical Bldg., Minneapolis 2, Secretary.

American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, Philadelphia, Feb. 26. Dr. Norman N. Smith, 291 Whitney Ave., New Haven 11, Conn., Secretary.

American Society of Biological Chemists, Atlantic City, March 14-19. Dr. Otto A. Bessey, Public Health Research Institute, New York 19, Secretary.

Central Surgical Association, Chicago, Drake Hotel, Feb. 19-21. Dr. Walter G. Maddock, 250 E. Superior St., Chicago 11, Secretary.

Chicago Medical Society Annual Clinical Conference, Chicago, Palmer House, March 2-5. Dr. Willard O. Thompson, 30 N. Michigan Blvd., Chicago 2, Secretary.

Dallas Southern Clinical Society, Dallas, Texas, Hotel Adolphus, March 15-18. Dr. Glenn D. Carlson, 1133 Medical Arts Bldg., Dallas, Secretary.

International Postgraduate Medical Assembly of Southwest Texas, San Antonio, Municipal Auditorium, Jan. 27-29. Dr. W. W. Bondurant Jr., 711 E. Houston St., San Antonio, President.

Michigan Postgraduate Clinical Conference, Detroit, Book-Cadillac Hotel, March 10-12. Dr. H. H. Cummings, 2014 Olds Tower, Lansing 8, Chairman.

Mid-South Postgraduate Medical Assembly, Memphis, Tenn., Feb. 10-13. Dr. Arthur F. Cooper, 1479 Carr Ave., Memphis, Secretary.

Missouri State Medical Association, St. Louis, Hotel Jefferson, March 14-17. Mr. T. R. O'Brien, 634 N. Grand Blvd., St. Louis 3, Exec. Secretary.

National Conference on Medical Service, Chicago, Palmer House, Feb. 8. Dr. Edward F. Sladek, 232 E. Front St., Traverse City, Mich., Secretary.

New Orleans Graduate Medical Assembly, New Orleans, Municipal Auditorium, Feb. 23-26. Dr. Max M. Green, 1430 Tulane Ave., Room 105, New Orleans 13, Secretary.

Pacific Coast Surgical Association, Los Angeles, Ambassador Hotel, Feb. 24-28. Dr. Carleton Mathewson Jr., Stanford Univ. Hospital, San Francisco, Secretary.

Southern Society for Clinical Research, New Orleans, Jan. 27. Dr. Thomas Findley, Ochsner Clinic, New Orleans 15, Secretary.

Tri-States Medical Association of the Carolinas and Virginia, Charleston, S. C., Fort Sumter Hotel, Feb. 9-10. Dr. James M. Northington, 306 N. Tryon St., Charlotte 2, Secretary.

Washington Letter

(From a Special Correspondent)

Jan. 20, 1948.

Dr. Hawley to Head Blue Cross and Blue Shield

Dr. Paul R. Hawley, former medical director of the Veterans Administration, was appointed chief executive officer of the Blue Cross and Blue Shield prepaid health service plans, two privately operated organizations with membership estimated at 36,500,000. His headquarters will be in Chicago. The appointment takes effect April 1. Dr. Hawley accepted the posts at a dinner at the Hotel Statler. He will continue to spend some time in Washington in a consulting capacity as a special assistant to veterans administrator Carl Gray and as head of a special committee formed by Secretary of Defense Forrestal to unify medical services in the armed forces. He also directs another medical group surveying the medical and sanitation phases of the national mobilization program for the National Security Resources board. Dr. Hawley said that he is opposed to government control of medicine and that he has seen government medicine in operation in other countries, commenting: "I know what government control does to medicine. I want no part of it for our people." Government doctors tend to forget the humanities in medicine, he said, with the result that the physician-patient relationship is affected. The Blue Cross, approved by the American Hospital Association, comprises ninety-one nonprofit hospital service prepayment plans. The Blue Shield, approved by the American Medical Association, includes forty-eight nonprofit medical-surgical service prepayment plans. Paying tribute to Dr. Hawley at the dinner were Dr. Edward L. Bortz of Philadelphia, President of the American Medical Association, and Graham L. Davis of Battle Creek, Mich., president of the American Hospital Association.

Dr. Paul B. Magnuson Heads Veterans' Medical Department

Carl R. Gray, veterans administrator, appointed Dr. Paul B. Magnuson of Chicago medical director of the Veterans Administration to succeed Dr. Paul R. Hawley, who resigned January 1. Dr. Magnuson is a native of St. Paul and was professor of surgery at Northwestern University Medical School before joining the agency in January 1945. He had been second in command of the agency medical department, and Mr. Gray said that Dr. Magnuson, with Dr. Hawley, "played a large role in affiliating more than half of the Veterans Administrations' one hundred and twenty-six hospitals with Class A medical schools over the country and in establishing the agency's residency training program." Since September Dr. Magnuson has been the agency's acting chief of professional services. Dr. Hawley will continue to assist in carrying out the veterans' medical program.

Dr. Overholser Charges Mental Hospitals are "Financially Starved"

In comment on the report of Dr. Samuel B. Wortis on conditions at Gallinger Hospital's psychopathic division, Dr. Winfred Overholser, superintendent of St. Elizabeths Hospital, declared that there has been "too much systematic financial starvation of public mental hospitals in this country." He said that mental patients must be regarded as medical problems and not as objects of charity. He advocated better medical techniques, better facilities, better nurses and more adequate financing.

Research Hospital to Include Beds for Patients with Cancer

Federal Security Administrator Oscar R. Ewing announced that the proposed five hundred bed research hospital in Bethesda, Md., will include accommodation for 150 patients with cancer. It is planned to give physicians their first real chance to make an intensive study of victims of chronic cancer. Mr. Ewing, in his statement prepared for delivery to the House of Delegates

of the American Medical Association at the interim meeting in Cleveland, asked the American Medical Association for the cooperation of organized medicine on noncontroversial health projects. He said that one of the most pressing American health problems was the proper distribution of hospitals and medical personnel.

Medical Legislation

STATE LEGISLATION

Massachusetts

Bills Introduced.—H. 69, to amend the law relating to the practice of dentistry, proposes that no corporation shall conduct a dental office and no person shall conduct a dental office under any name other than that of the dentist actually owning the practice. H. 91, to amend the medical practice act, proposes to provide for the revocation of the certificate of registration of any physician guilty of the use of narcotic drugs in any way other than for therapeutic purposes. H. 92, to amend the law relating to the inspecting of colleges, universities and medical schools, proposes the appointment of an approving authority to inspect such institutions from time to time and to notify the trustees or governing bodies of such institutions in the event that they do not meet the necessary requirements for approval. H. 104 proposes an act to provide for the development and administration of a hospital construction program. Among other things, this proposal defines "hospital" and "public health center," authorizes the commissioner of the state department of public health to apply for federal funds in a state hospital construction program and provides for the appointment of an advisory hospital council to advise and consult with the commissioner in relation to any construction operations. H. 106, to amend the law relating to the licensing of hospitals, sanatoriums, convalescent and nursing homes, proposes that certain safety features must be included in such institutions before a license will be issued. H. 110, to amend the law designating certain diseases which physicians must report to the department of public health, proposes that the department may designate other diseases not specifically mentioned in the statute which shall be reported by physicians but which shall not thereby be deemed to have been declared diseases dangerous to the public health. H. 111, to amend the law relating to the adulteration, misbranding, etc. of dangerous drugs, proposes, among other things, to define harmful drug as including amidopyrine, benzedrine, cantharides, cinchophen, digitalis, dinitroresorcinol, dinitrophenol, ergot, estrogen, natural or synthetic, barbituric acid, chloralhydrate, paraldehyde, sulfonamide drugs, thyroid, oil of croton, oil of pennyroyal, oil of sassa and oil of tansy and then proposes that no harmful drug as defined herein shall be sold at retail or dispensed or given away to any person except on the written prescription of a physician, dentist or veterinarian nor shall a prescription therefor be renewed or refilled by a pharmacist if the prescription bears any indication that it is not to be so renewed or refilled. H. 310 proposes a law for a voluntary system for payment of hospital, surgical operation, sickness and bodily injury and maternity benefits to employees. H. 385 proposes that whoever experiments or operates in any manner whatsoever on any living dog or cat for any purpose other than the healing, curing or sterilizing of said dog or cat shall be punished by a fine or imprisonment or both. H. 414 proposes the creation of a hospital lien on any patient's cause of action to the extent of support, treatment or medical care which the hospital has rendered to such patient. H. 1349 and S. 44 propose that any person who was a student at the College of Physicians and Surgeons prior to June 30, 1946 and who receives a degree of doctor of medicine therefrom prior to June 30, 1949 shall be eligible to be an applicant for registration as a qualified physician, shall be examined for such registration by the board of registration in medicine and shall be subject to and have the benefit of all pertinent provisions of law relative to such eligibility and examination.

Mississippi

Bill Introduced.—H. 5, to amend the law relating to procedure for committing persons to state mental institutions; proposes that no person shall be admitted to a state mental institution except on a satisfactory report from two reputable licensed physicians.

New York

Bills Introduced.—A. 99, to amend the labor law, proposes to permit recovery under the unemployment insurance act for unemployment due to sickness or accident disability which has been certified under oath by a physician or surgeon duly licensed to practice in the state of New York. A. 100, to amend the labor law, proposes to extend the coverage under the unemployment insurance law to employees of charitable, scientific, literary or educational organizations.

Rhode Island

Bill Introduced.—H. 513, to amend the sales and use tax act, proposes to exempt therefrom hospitals not operated for profit and businesses engaged in the sale and storage of medicines and medical supplies.

GOVERNMENT SERVICES

ARMY, NAVY AND AIR FORCE

BOARD TO STUDY UNIFICATION OF MEDICAL SERVICES

Secretary of Defense James Forrestal has listed some of the problems which he desires to have considered by the recently appointed Committee on Medical and Hospital Services of the Armed Forces. Dr. Paul R. Hawley, formerly chief medical director of the Veterans Administration, is chairman of the committee; the Surgeons General of the Army and Navy and the Air Surgeon are the other members. Rear Admiral Joel T. Boone (MC), U.S.N., inspector, medical activities, Pacific Coast, has been called to Washington to act as executive secretary of the committee. In general, the Secretary of Defense desires a thorough, objective and impartial study of the medical services of the Armed Forces with a view to obtaining, at the earliest possible date, the maximum degree of coordination, efficiency and economy in the operation of these services. The list, Mr. Forrestal said, is not meant to be exclusive or in any way to limit the avenues of the inquiry in furtherance of the general objective. On the contrary, it is intended to be suggestive of the kind of problems which he believes must be tackled.

Among the specific problems outlined by Mr. Forrestal were the following:

1. Improvement in the utilization of the existing hospital facilities of the several medical services. This will include consideration of the number of hospital beds required in each geographic area to meet the collective needs of the three services; a study of which hospitals are so located as to make it feasible for them to serve more than one of the departments, and a determination as to which hospitals, if any, should be closed, placed in standby status or disposed of as surplus. It will also require an examination and reevaluation of the standards for hospitalization and an inquiry into the possibility of using other facilities, in lieu of regular hospitals, for minor convalescence, periodic medical examinations and the like.

2. Coordination of current plans of the medical services for the construction of any new hospital facilities in the future.

3. Methods for improving the organization and administration of the several medical departments in the operation of both their hospital and medical programs, including the possibilities of consolidation or coordination of certain activities and functions thereof and the reduction of the combined overheads of the medical services of the Armed Forces.

4. Coordination or consolidation of the medical research programs of the medical services, and the maximum joint use of research facilities.

5. Coordination or consolidation of medical training programs of the medical services of the Armed Forces. This should include an inquiry into the possibilities of joint utilization of service schools, the coordination of postgraduate training, the provision by one service for all services of general training or training in specialized fields, joint preparation of medical bulletins and specialized courses and common library facilities.

6. Allocation to one service of the responsibility for providing all hospitalization and medical care for all services in certain fields of medicine as, for example, in the fields of tropical medicine, neuropsychiatry, radiologic injuries, prosthetics and serious disorders of the ear and eye.

7. Development of common standards and procedures among the medical services with respect to the physical and mental requirements for entrance into the services and for disability discharges; preventive medicine, and the organization, administration and operation of hospitals.

8. Improvement and standardization of medical records and nomenclature; cost accounting systems; forms; specifications for supplies and equipment, and regulations.

9. Maximum utilization of qualified medical personnel of the Armed Forces. Consideration should be given to the joint use of highly specialized personnel, to the possibility of interchange of medical personnel among the medical services depending on requirements and facilities for such personnel, to the relief of qualified physicians from administrative responsibilities and to providing them with greater opportunity for exclusive attention to the practice of their profession.

In conducting this study the committee is authorized to consult with such persons in the Armed Forces as it may wish and to call as witnesses such individuals or organizations from outside the regular military establishment as the committee desires. Mr. Forrestal said that although he would like a report at the earliest practicable date he does not want haste to detract from the submission of a thorough, comprehensive study. He believes that few problems facing the national military establishment have the importance and urgency of the matters which the committee is being asked to study.

PUBLIC HEALTH SERVICE

EXPERIMENTAL BIOLOGY AND MEDICINE INSTITUTE

The establishment of an Experimental Biology and Medicine Institute in the National Institute of Health of the U. S. Public Health Service has been announced by the Federal Security Administrator. The new research institute will combine the functions of the division of physiology and the pathology and chemistry laboratories and will permit greater coordination of scientific investigations.

Formation of the institute is part of a wider organization of the National Institute of Health, Thomas Parran, Surgeon General of the Public Health Service, explained. Four other divisions and laboratories engaged in scientific research also will be consolidated into two additional institutes. All of them will be modeled after the National Cancer Institute.

Dr. William Henry Sebrell Jr., chief of the division of physiology, has been named director of the new institute. He will also serve as associate director of the National Institute of Health. The director of the new institute is an authority in the field of nutrition who has been with Public Health Service since his graduation from the Virginia School of Medicine in 1925. He served under Dr. Joseph Goldberger, pioneer nutri-

tionist, and after Dr. Goldberger's death in 1929 was placed in charge of nutrition studies at the institute. In 1940 he received the Mead Johnson Award of the American Institute of Nutrition for research on vitamin B complex and in 1946 was awarded the research medal of the Southern Medical Association. In 1945, at the request of the War Department, Dr. Sebrell spent three months in Europe as consultant on nutrition to the U. S. Army's Military Government Public Health Staff. For his outstanding services he was awarded the Legion of Merit.

SYMPOSIUM ON VENEREAL DISEASE

The Syphilis Study Section of the National Institute of Health, a group of consultants organized for the purpose of promoting research in the field of venereal disease, announces a symposium on "Recent Advances in the Study of Venereal Diseases," to be held in the Commerce Building, Washington, D. C., on April 8 and 9. Interested persons are invited to attend. Copies of the program will be sent on request. Inquiries should be addressed to Dr. Frank W. Reynolds, Executive Assistant, Syphilis Study Section, Division of Research Grants and Fellowships, National Institute of Health, Bethesda 14, Md.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Epidemic in Los Angeles.—The Los Angeles City Health Department in the *Bulletin* of the Los Angeles County Medical Association January 15 reported a "widespread outbreak of some sort of upper respiratory infection in Los Angeles." Clinical symptoms vary too much to implicate any single specific disease. Both upper respiratory and gastrointestinal symptoms are reported. The disease, the report continues, is probably caused by a virus and has a short incubation period (two days plus).

ILLINOIS

State Bacteriologists Meet.—The Society of Illinois Bacteriologists will meet Friday, January 30, at 6:30 p. m. in the Museum of Science and Industry, Chicago. Among the speakers will be Dr. Guy P. Youmans, Chicago, on "Streptomycin in the Treatment of Tuberculosis" and Dr. James A. Schoenberger, Chicago, on "Results of Vaccination Against Influenza During the Spring of 1947."

Chicago

Graduate Course in Pediatrics.—Michael Reese Hospital will conduct a postgraduate course in recent advances in pediatrics May 3-15. The course is divided into two week-long sections, (1) The Full Term and Premature Infant in Health and Disease and (2) Diagnostic and Therapeutic Measures in General Pediatrics. Tuition is \$50 per section. The size of the class is limited. For information address Dr. Samuel Soskin, Dean, Michael Reese Hospital Postgraduate School, 29th Street and Ellis Avenue, Chicago 16.

Museum Plans Medical Exhibits.—The Museum of Science and Industry in Jackson Park has established a six to eight year exhibit construction program in the fields of the medical sciences. Dr. Andrew C. Ivy, vice president of the University of Illinois, has been appointed head of the program. The university and the museum will cooperate, and Dr. Ivy's committee will assume responsibility for the development of a general plan of exhibit subjects. Dr. Thomas G. Hull, director of the Scientific Exhibit of the American Medical Association and assistant professor of public health at the University of Illinois, will be executive director of the Committee on Health Exhibits. The yearly traffic at the museum is a million and a half visitors from all parts of the country.

Neurology Lecture Series.—Harlow W. Ades, Ph.D., visiting professor in the Institute of Neurology of Northwestern University Medical School, is conducting a series of four lectures on "Central Auditory and Cortical Function," all meetings convening at 4 p. m. in room 641 of the medical school. The lecture on January 29 will deal with learned responses to auditory stimuli and on February 5 with the problem of learning in relation to structure and function. Dr. Ades is assistant professor of neuroanatomy and chairman of the anatomy department, Emory University School of Medicine, Atlanta, Ga. His appointment at Northwestern is the first under a recently established annual visiting professorship in the Institute of Neurology, sponsored by the Rockefeller Foundation.

MASSACHUSETTS

Gift to Medical Center.—A gift of \$300,000 was received Nov. 30, 1947, by the Bingham Associates Fund which supports the New England Medical Center, Boston, from Jacob Ziskind, Fall River, an industrialist. Leonard Carmichael, Ph.D., president of Tufts College and chairman of the fund, said that the money would be used to purchase a medical research building for the center. Participating institutions include the Joseph H. Pratt Diagnostic Hospital, Boston Floating Hospital, Boston Dispensary and Tufts Medical School, the teaching base.

Death of Pioneer Nutritionist.—Miss Frances Stern, pioneer nutritionist and founder of the Food Clinic of the Boston Dispensary, died Dec. 23, 1947, aged 74, following a heart attack at her home in Newton. The clinic was named the Frances Stern Food Clinic in her honor, and the Frances Stern Nutrition Fund for Tufts College Medical School, Boston, was established by friends. The clinic under Miss Stern's direction has served as a teaching and research center for Tufts College Medical School, Simmons College School of Social Work, Framingham Teachers College and Regis College.

MICHIGAN

Rheumatic Fever Centers in Wayne County.—The Michigan State Medical Society's Committee on Rheumatic Fever Control, with the financial assistance of the Michigan Society for Crippled Children and Disabled Adults, Inc., has approved the opening of sixteen new Rheumatic Fever Control Centers in Wayne County. The program will be under the joint operation of the state and Wayne County medical societies' committees on rheumatic fever control.

Grant for Group Therapy Studies.—The U. S. Public Health Service Commission on Mental Hygiene has made a grant of \$18,030 to aid Wayne University, Detroit, in evaluating information gained by observation of group therapy work for children. Fritz Redl, professor of social work in the School of Public Affairs and Social Work, will direct the research for one year beginning next month. The evaluation will cover four research problems: (1) criteria for group composition; (2) the phenomenon of contagion and aggravation in therapy groups; (3) methodology of recording for use in therapy groups, and (4) the factor of timing in the exposure to therapy groups.

Seminar in Physical Medicine.—Physical Medicine will be the subject of a one day seminar Wednesday, February 4, in Bay City, at the Wenonah Hotel, with the following lectures:

H. Barbara Jewett, Detroit, An Occupational Therapy Technician in General Practice.

Dr. Frederick B. House, Ann Arbor, Management of Cerebral Palsy.

Dr. Max K. Newman, Detroit, Physical Medicine in Vascular Disease of the Extremities.

Dr. Walter M. Solomon, Cleveland, Physical Medicine in Arthritis.

The new department of physical medicine at Bay City's General Hospital will be inspected by registrants at 5 p. m. prior to dinner at the hotel. In the evening Dr. Louis B. Newman, Veterans Administration Hospital, Hines, Ill., will speak on "The Management of Paraplegics—Spinal Cord Injuries." Sponsors of the seminar are the Bay County Medical Society, the Michigan State Medical Society's Committee on Postgraduate Medical Education, Wayne University and the Bay City General Hospital.

MINNESOTA

Memorial to Dr. O'Brien.—A memorial to the late Dr. William A. O'Brien, director of postgraduate medical education and professor of public health at the University of Minnesota School of Medicine, Minneapolis, has been set up to provide funds to be used to furnish facilities at the Mayo Memorial Medical Center for continuation study programs such as Dr. O'Brien developed. Dr. O'Brien died Nov. 15, 1947.

MISSISSIPPI

First Physician Under Program Enters Rural Practice.—Dr. Lloyd Z. Broadus, who completed medical training at the University of Utah in 1947, is the first young physician to complete training under Mississippi's scholarship loan program and has entered general practice at Purvis, a community of one thousand persons. A total of one hundred and five medical students in Mississippi are now receiving benefits of the medical education scholarship loan. About 69 per cent of the total are veterans of World War II.

NEW MEXICO

Lecture on Cancer.—Dr. Charles L. Martin, professor of radiology, Southwestern Medical College, Dallas, Texas, will address the New Mexico Clinical Society at its January 28 meeting at the Veterans Hospital, Albuquerque, at 8 p. m. Dr. Martin will present a lecture with colored films on "Treatment of Cancer of the Face, Lip, Mouth and Metastatic Lymph Nodes with Radiation." The society, organized in November 1946 by a group of Albuquerque, Santa Fe and Los Alamos physicians, sponsors a monthly lecture by leading authorities in the fields of clinical medicine and surgery.

NEW YORK

Lecture for Suffolk County.—Dr. George E. Anderson, Brooklyn, will speak on "Diabetes Mellitus" before the Suffolk County Medical Society at 8 p. m. January 28 at the Patchogue Hotel, Patchogue. The lecture was arranged by the Medical Society of the State of New York with the cooperation of the New York State Department of Health.

Consultation Services for Health Departments.—The State Department of Health plans to establish by February 1 five state regions with offices located in Buffalo, Rochester, Syracuse, Albany and New York, and a sixth region with headquarters also in New York to serve the metropolitan area. The regional offices are to provide consultation service to the staff of the district, county and city health departments within

the region; assistance in program planning, development and operation; guidance to local health departments, and observations for the state department of health of the local health departments in the region. Direct services to local residents will not be given by any of the personnel assigned to regional offices, except in the unorganized district on a temporary basis until permanent plans have been made. The supervisory functions previously carried by the district office will become functions of the regional office, and as soon as county health departments take over the functions of the state district offices the state districts will be eliminated. Then the regional offices will assume the duties of the district offices not covered by county and city health departments.

New York City

Record High Birth Rate.—According to the preliminary report of the city health department during the past year, 170,469 births set an all-time high record, with a birth rate of 21.8 per thousand population, as compared to 19.6 for 1946. The record number of births was accompanied with an all time low record in infant mortality (26.5 per thousand live births) and a maternal mortality rate of 1.1 per thousand live births. Deaths from cancer rose sharply. Although the death rate for tuberculosis continued to decline, it was the leading cause of death among persons in the 15 to 24 age group. Poliomyelitis cases were the lowest in number since 1942. Of the 11 children who died (January through November) of diphtheria, 9 had never received toxoid.

Cancer Research at Columbia.—Columbia University has received funds totaling \$28,376 from the American Cancer Society, Inc., for research on cancer. One gift, \$7,368, was for the continued study of the application of the isotope technic to the problems of clinical medicine in man. This project is being carried on by the department of biochemistry. Other projects provided for in the funds were research on cells in vitro and research on nucleic acid of normal and cancerous tissues, both by the department of surgery, and a study of animal tissues by the department of medicine. Columbia also announced receipt of \$2,250 from the New York City Cancer Committee of the American Cancer Society for clinical research on gynecologic cancer, the work to be carried on by the department of obstetrics and gynecology.

Survey of Employees with Heart Disease.—A joint survey of persons in industry with heart disease to determine the appropriateness of their jobs and to offer guidance to those in unsuitable vocations was initiated by New York University College of Medicine and the New York State Department of Education January 8. The survey will be carried out in the Bellevue Hospital Cardiac Clinic. University doctors will continue to be responsible for the care of the patients as well as for the evaluation of their physical capacities. Added to the clinic's staff will be a group of interviewers from the state Office of Vocational Rehabilitation. An important aim of the survey will be to develop data which will help to demonstrate that persons with cardiac disorders can be employed more widely than at present with practically no risk to themselves or their employers.

OHIO

Personal.—Dr. Carl A. Wilzbach, Cincinnati, has received an award from the American Cancer Society for his activities in the last ten years in behalf of cancer control. Dr. Wilzbach and Dr. Lawrence A. Pomeroy of Cleveland helped in starting the Ohio unit of the society.

Awards for Public Service.—The Public Health Federation of Cincinnati in December presented two scrolls and engraved gold keys as awards of honor to two of its members. Dr. William Muhlbarg, former medical director of the Union Central Life Insurance Company, and Mr. Bleeker Marquette were cited for distinguished service to the cause of public health in greater Cincinnati for their "effort and outstanding achievement over a period of many years." Among other activities, Dr. Muhlbarg has served the federation as president and president of the board and Mr. Marquette has served as executive secretary.

Grants for Development of Psychiatry.—The department of psychiatry at the University of Cincinnati College of Medicine has been awarded a \$175,000 grant by the Rockefeller Foundation, effective January 1. The grant covers a five year period and is to be used for the development of psychiatry under Dr. Maurice Levine, professor and head of the psychiatry department. Two other grants have been awarded to the department this year: The first was \$28,800 from the Commonwealth

Foundation for use in joint projects of the departments of psychiatry and internal medicine under Drs. Levine, Marion A. Blankenhorn, professor of medicine and head of the department, and Eugene B. Ferris, associate professor of medicine. The other was \$22,150 from the U. S. Public Health Service for use under the Mental Health Act passed by Congress.

OKLAHOMA

Disease Prevention Campaign.—The Garfield County Medical Society in cooperation with school officials and the state department of health began a campaign for disease prevention Dec. 5, 1947 by inoculating 1,500 school children in Enid for diphtheria and pertussis. Plans are under way for carrying the campaign to outlying towns and school districts in the county. Sixteen physicians, all members of the society, reported for duty. Participation is voluntary on the part of both physicians and parents. The physicians are making no charge for their services, and the state is furnishing the serum without charge. Children of preschool age may also be included.

TEXAS

University News.—Dr. Hans Molitor, director of the Merck Institute for Therapeutic Research, will lecture January 26 at the University of Texas Medical Branch, Galveston, on "The Pharmacology of Antibiotics."—Mr. Jack Still, professor of biochemistry, University of Sydney, Australia, recently visited the Medical Branch to survey studies on enzyme chemistry. Mr. Still is a Rockefeller traveling fellow and plans to work at Columbia University, New York.—Wilbur A. Selle, Ph.D., professor of physiology and director of the Laboratory of Medical Physics, has been appointed visiting professor of physiology at the University of Arkansas School of Medicine, Little Rock, Ark. He will return to direct a graduate course in physical medicine March 1-5 at the University of Texas Medical Branch.

VIRGINIA

Society News.—The Virginia Pediatric Society has elected Dr. Thomas A. Gibson, Winchester, president, and Dr. E. Berkeley Neal, Roanoke, secretary-treasurer.

Motorized Tuberculosis Clinics.—Three mobile clinics, operated by the state department of health throughout the hundred counties of Virginia, keep up a year-round town to town campaign against tuberculosis. Each clinic, which is assigned to roughly one third of the state, visits each county in its section twice a year. The clinics are set up to take six hundred 70 mm. films a day and seventy-five chest pictures 14 by 17 inches (35.56 by 43.18 cm.). The state program began in 1930.

First Stoneburner Memorial Lecture.—Dr. Perrin H. Long, professor of preventive medicine at Johns Hopkins University School of Medicine, Baltimore, will deliver the first Lewis T. Stoneburner III lecture in internal medicine at the Medical College of Virginia, Richmond, in Baruch Auditorium January 30 at 8 p.m. on "Choice of Sulfonamide Drugs and Antibiotic Agents in the Treatment of Infections." The lecture-ship was established at the Medical College of Virginia by the friends of Capt. Lewis T. Stoneburner III who were members of the 45th Hospital Division with him during World War II (THE JOURNAL, Dec. 13, 1947, p. 1017).

HAWAII

Enlarge Tuberculosis Hospital.—Leahi Hospital, Honolulu, the only institution for the care and treatment of tuberculosis on the island of Oahu, is undergoing a \$4,300,000 construction program, which will give the main hospital a bed capacity of 916 as compared with that of 488 before construction began. Two ward units providing 248 beds were to have been opened in December. The hospital began to function as a tuberculosis sanatorium in 1906. It is a nonprofit corporation chiefly financed by the Territory of Hawaii.

Cardiac Clinic Opened.—St. Francis Hospital, Honolulu, opened a cardiac clinic in its new wing in August. Set up in accord with the standards of the American Heart Association, it maintains a full time social service worker who deals with conditions such as the patient's home situation, occupation or point of view, which may require adjustment in order to make medical treatment effective. The Honolulu Chamber of Commerce granted \$3,000 for the purchase of equipment and pamphlets to be used in the education program for the patients. Dr. F. Bernard Schultz is director.

GENERAL

Magazine for Diabetic Persons.—The American Diabetes Association began publication of the *ADA Forecast*, a magazine for diabetics, in January 1948. Its purpose is to give the physician an additional aid in the treatment of his diabetic patient by giving the patient helpful articles by authorities in the field and an understanding for the need of close cooperation with his physician. The first number of the *Forecast* includes articles by Dr. Elliott P. Joslin, Boston, Dr. Herman O. Mosenthal, New York, and Dr. Joseph H. Barach, Pittsburgh.

Electroencephalographers Meet.—The Western Society of Electroencephalography held its first scientific meeting at the University of California Hospital, San Francisco, Nov. 8, 1947. A constitution was adopted, which offers membership to physicians actively engaged in the specialty. Investigators in scientific fields related to electroencephalography are eligible for associate membership. Dr. Robert B. Aird, San Francisco, was elected chairman and Dr. Nicholas A. Berceel, Los Angeles, secretary-treasurer. The next meeting will be held in San Francisco April 10-11 directly preceding the annual meeting of the California Medical Association.

Meeting on Physical Medicine.—The Midwestern section of the American Congress of Physical Medicine will hold its annual meeting February 26-27 at the Veterans Administration Hospital, Hines, Ill. A seminar on spinal cord injuries will follow registration at 10 a. m. Physicians associated with Northwestern University Medical School, the University of Illinois College of Medicine, Chicago, and the Veterans Administration Hospital will appear on the program. All sessions will be open to physicians, other professional personnel and their guests. Other subjects to be discussed on Friday include physical medicine in relation to peripheral vascular lesions, peripheral nerve injuries, fractures, amputations and arthritis, and psychosomatic problems of the severely disabled.

Special Society Elections.—The National Malaria Society at its meeting in Atlanta, Ga., in December elected Dr. E. Harold Hinman, Wilson Dam, Ala., president and Wendell D. Gingrich, Ph.D., Galveston, Texas, president-elect. Martin D. Young, Sc.D., Columbia, S. C., was reelected secretary-treasurer. At the annual meeting of the American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, Dr. Jacob Daley, New York, was elected president, Dr. Norman N. Smith, New Haven, Conn., secretary, and Dr. Benjamin H. Shuster, Philadelphia, treasurer. The American Chemical Society elected Linus C. Pauling, Sc.D., chairman of the division of chemical engineering of the California Institute of Technology, as president for 1948.

Report of Ella Sachs Plotz Foundation.—The twenty-fourth annual report of the Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation lists twenty-six grants during 1947 to institutions or investigators, making a total of five hundred and seventy-six grants in the twenty-four years of the foundation's existence. The grants may be used for the purchase of apparatus and supplies needed for special investigations and for the payment of unusual expenses incident to special investigations but not for providing apparatus or materials ordinarily a part of laboratory equipment. Application for grants for the year 1948-1949 should be sent to Dr. Joseph C. Aub, Massachusetts General Hospital, Fruit Street, Boston 14. They must be in the hands of the executive committee before April 15, 1948.

Campaign to Raise Millions to Aid War Victims.—American Overseas Aid—United Nations Appeal for Children will launch a campaign in February to obtain \$60,000,000 to meet emergency needs of millions of children of war-stricken countries and to supplement assistance extended by agencies of the United Nations. American Overseas Aid is a federation of the major voluntary agencies for foreign relief, organized at the suggestion of President Truman and in answer to the increasing demands from American community leaders for unification of peacetime appeals for aid to wartime victims. Funds will be used by various agencies for food, medical care, medicines, clothing, shelter, rehabilitation, education and training of workers in emergency fields. American Overseas Aid itself does not conduct any relief operations. It serves as the medium for financing activities of the various agencies, screens and coordinates agency activities to insure sound and efficient operations and examines and audits records of all program expenditures.

Dr. Gradle Awarded Medal for Prevention of Blindness.—The first Pan American Medal of the National Society for the Prevention of Blindness in the United States was awarded January 10 to Dr. Harry S. Gradle, for many years

a leading ophthalmologist in Chicago. Dr. Gradle is now retired and living in California. The award was made in Havana, Cuba, during the third Pan American Congress of Ophthalmology, of which Dr. Gradle was the founder and first president. Dr. Baudilio Courtis, Buenos Aires, Argentina, made the presentation to Dr. Gradle in absentia; he was unable to be present because of ill health. The citation read: "For scientific contributions to knowledge about causes of blindness and impaired vision, for outstanding service in advancing education in ophthalmology, for distinguished leadership in founding the Pan American Association of Ophthalmology."

Dr. Gradle graduated from the Rush Medical College in 1906. He served as attending and later senior attending ophthalmic surgeon to Michael Reese Hospital, Chicago, and for several years he was chief of staff at the Illinois Eye and Ear Infirmary. He was active in many scientific societies and held a professorship at the University of Illinois College of Medicine.

Five Leading Causes of Death.—The federal security administrator has just announced that a new record low crude death rate was made in the United States in 1946, when the death rate was 10 per thousand population as compared with the previous lowest rate of 10.4 in 1942. These figures are for the continental United States and exclude stillbirths and deaths among armed forces overseas. The five leading causes of death were diseases of the heart, which caused 429,230 deaths, cancer and other malignant tumors (182,005), intracranial lesions of vascular origin (125,646), nephritis (81,701) and accidents, excluding motor vehicle (64,622). Deaths from diseases of the heart increased for the third consecutive year and accounted for 30.8 per cent of the total number of deaths. Cancer and other malignant tumors continued to increase in importance as a cause of death, producing 13 per cent of the total number of deaths in 1946. The number of deaths from the other major chronic diseases, including intracranial lesions of vascular origin, nephritis, diabetes mellitus, pneumonia, influenza and tuberculosis, decreased from the previous year. The number of deaths from diabetes mellitus was 34,731 as compared with 35,160 in 1945. Tuberculosis caused 50,911 deaths in 1946 as compared with 52,916 in 1945. Maternal mortality declined to a new low in 1946 despite an increase of about 20 per cent in the number of births. Maternal deaths decreased from 5,668 in 1945 to 5,153 in 1946. Deaths from accidents totaled 98,033, of which 33,411 were the result of motor vehicle accidents.

CORRECTIONS

Experiment in Cardiac Rehabilitation.—The Altro Work Shops, Inc., has undertaken an experiment in the field of cardiac rehabilitation, not "in the field of cardiac rehabilitation of the tuberculous" as stated in *THE JOURNAL*, January 10, page 123.

Dr. Nelson Directs Laboratory of Research Toxicology.—Norton Nelson, Ph.D., associate professor of industrial medicine at New York University College of Medicine, is the director of the Laboratory of Research Toxicology of the Institute of Industrial Medicine of the New York University-Bellevue Medical Center, and not Rose C. Nelson, Ph.D., as stated in *THE JOURNAL*, Dec. 27, 1947, page 1160.

Marriages

CHARLES MILTON CARPENTER, Rochester, N. Y., to Miss Christine Thackston of Greenville, N. C., Oct. 4, 1947.

WILLIAM H. ROSENBLATT, Louisville, Ky., to Miss Margaret Hart Dreyfus of Jackson, Miss., Nov. 20, 1947.

ROGER G. MAGRUDER, Charlottesville, Va., to Miss Eleanor Ruth Moseley of Quanah, Texas, Oct. 18, 1947.

WALTER FRANK DAUGHTREY JR. to Miss Virginia Brooks Manry, both of Courtland, Va., Sept. 27, 1947.

NEIL CARRINGTON PRICE to Miss Annie Elizabeth Wolfe, both of Orangeburg, S. C., Oct. 18, 1947.

RALPH PARR BAKER to Miss Frances Elizabeth Renwick, both of Newberry, S. C., Nov. 14, 1947.

NORMAN SOLLOD, Petersburg, Va., to Miss Phyllis Laurel Freed of Harrisonburg, Nov. 2, 1947.

EDGAR H. MYERS, Hemingway, S. C., to Miss Mary Carolyn Epps of Kingstree, Nov. 15, 1947.

JAMES GRAY PERKINS to Miss Shir'lee Anne Dillard, both of Portland, Ore., Sept. 14, 1947.

Deaths

William Austin O'Brien * St. Paul; born in Fairbury, Ill., Feb. 28, 1893; St. Louis University School of Medicine, 1913; interned at Mount St. Rose Sanatorium and St. John's Hospital in St. Louis; at one time practiced in Detroit, where he had been an assistant in the health department; served in the U. S. Army medical corps during World War I; in 1921 entered the University of Minnesota to do graduate work and in 1923 joined the faculty as an instructor in pathology; advanced to professor of preventive medicine and public health and director of postgraduate medical education; specialist certified by the American Board of Pathology; state chairman and member of the board of directors of the American Cancer Society; member of the Minnesota Pathological Society; formerly pathologist to the University Hospitals; radio spokesman on WCCO for the Minnesota State Medical Association since 1928 and for many years for the Minnesota Dental Association and the Minnesota Hospital Association; staff member of the School of the Air Station, KUOM, University of Minnesota, since 1940; author of a syndicated health column in newspapers; medical editor of the Newspaper Enterprise Association; died Nov. 15, 1947, aged 54.

Oliver William Welch * Homewood, Ala.; born in Talladega, Ala., Sept. 19, 1907; received his master's degree in public health from Harvard School of Public Health in June 1936; Harvard Medical School, Boston, 1933; interned at the Boston City Hospital and the Massachusetts General Hospital; specialist certified by the American Board of Internal Medicine; associate member of the American College of Physicians; member of the House of Delegates of the American Medical Association in 1947; served overseas in the medical corps, Army of the United States, during World War II; consultant in public health work for the Tennessee Valley Authority from July 1936 to June 1938; chief of the medical service at the Employees' Hospital of the Tennessee Coal, Iron and Railroad Company; died suddenly in Birmingham Oct. 21, 1947, aged 40, of acute coronary disease.

Walter Link Liefeld * Seaford, Del.; born in New Haven, Conn., in 1886; Cornell University Medical College, New York, 1910; fellow of the American College of Surgeons; served on the staffs of the Newark Eye and Ear Infirmary in Newark, Passaic General and St. Mary's hospitals in Passaic, N. J., the Hackensack (N. J.) Hospital, the Wilmington General, St. Francis, Delaware and Memorial hospitals in Wilmington; at the time of his death on the staffs of the Beebe Hospital in Lewes, Milford Memorial Hospital in Milford and the Peninsula General Hospital in Salisbury, Md.; died suddenly, Oct. 30, 1947, aged 61, of pulmonary embolism as he was preparing to perform an operation.

Henry W. Reiter * Shakopee, Minn.; born in Rockville, Minn., in 1863; University of Minnesota College of Medicine and Surgery, Minneapolis, 1893; for many years county coroner; served as city health officer; past president and secretary of the Scott-Carver Counties Medical Society; an affiliate Fellow of the American Medical Association; formerly member of the school board; chairman of the county draft board during World War I; for many years secretary of the local board of examining surgeons for the U. S. Pension Bureau; affiliated with Shakopee Hospital; for many years local physician for the Northwestern Railroad; died Oct. 30, 1947, aged 83, of coronary thrombosis.

Samuel Edgar Munson * Springfield, Ill.; born in Dawson, Ill., Aug. 25, 1866; Northwestern University Medical School, Chicago, 1893; past president, vice president, secretary and chairman of the section of medicine of the Illinois State Medical Society and for many years counselor of the Fifth District; past president of the Sangamon County Medical Society and the Central District Medical Society; fellow, formerly vice president and for many years member of the board of governors of the American College of Physicians; specialist certified by the American Board of Internal Medicine; affiliated with Springfield Hospital; died in Memorial Hospital Oct. 2, 1947, aged 81.

Walter August Bock, Chicago; Loyola University School of Medicine, Chicago, 1939; member of the American Medical Association; graduate of U. S. Army School of Aviation Medicine; assistant medical director, United Air Lines; served during World War II as captain in the medical corps and flight surgeon with the Army Air Forces on the African front, where he sustained in a bomber crash injuries that resulted in his retirement from active service; affiliated with Englewood and St. Anthony's hospitals; died in Mercy Hospital Nov. 7, 1947, aged 35, of Hodgkin's disease.

Charles Child Gildersleeve, Norwich, Conn.; Yale University School of Medicine, New Haven, 1896; member of the American Medical Association; past president of the Connecticut State Medical Society and the New London and Windham counties' medical societies; medical examiner for Norwich, Franklin and Lebanon; affiliated with the Day Kimball Hospital in Putnam and the William W. Backus Hospital; trustee of the Connecticut State Hospital, Middletown; past president of the Association of Yale Medical Alumni; died Nov. 1, 1947, aged 81, of arteriosclerotic heart disease.

Jay Perkins * Providence, R. I.; Harvard Medical School, Boston, 1891; an Affiliate Fellow of the American Medical Association; member of the Rhode Island Medical Society and the American Clinical and Climatological Association; for many years president of the Providence Tuberculosis League; served during World War I; director, Family Welfare Society, from 1906 to 1939; affiliated with the State Sanatorium, Wallum Lake, Charles V. Chapin Hospital, St. Joseph's Hospital and the Rhode Island Hospital, where he died Oct. 18, 1947, aged 83, of arteriosclerotic heart disease.

Thomas E. Williams, Shreveport, La.; born in Hillsboro, Ohio, June 23, 1873; Chicago Homeopathic Medical College, 1901; Jefferson Medical College of Philadelphia, 1905; member of the American Medical Association; served as president of the Louisiana Homeopathic Board of Medical Examiners; fellow of the American College of Physicians; member of the advisory board of the Shreveport Charity Hospital and of the board of directors of the Pines Sanatorium; a founder of the Tri-State Hospital, where he died Oct. 4, 1947, aged 74, of cardiac decompensation and carcinoma of the prostate.

Wesley H. Wallace, Brooklyn; born in Alexandria Bay, N. Y., Nov. 9, 1869; Medical College of Virginia, Richmond, 1899; member of the American Medical Association; fellow of the American College of Physicians; formerly on the faculty of the Long Island College Hospital; during World War I a captain in the Third Field Hospital Unit of the New York National Guard and head of the local draft board; served as vice president of the Radiological Society of North America; on the staff of Methodist Episcopal Hospital, where he died Oct. 14, 1947, aged 77, of arteriosclerosis.

Carlos Green Webster, New York; born in Milan, Ohio in 1872; Cleveland University of Medicine and Surgery, 1896; New York Homeopathic Medical College and Hospital, New York, 1904; member of the American Medical Association; served during World War I; for ten years in the Ohio National Guard and for many years with the 258th Field Artillery Regiment of the National Guard in the Bronx, retiring in 1936 with the rank of lieutenant colonel; formerly on the staff of Flower and Fifth Avenue Hospitals; died Oct. 30, 1947, aged 75, of cerebral hemorrhage.

Adam Hancock Adamson, Arcadia, Kan.; University Medical College of Kansas City, Mo., 1913; member of the American Medical Association; died in Mount Carmel Hospital, Pittsburg, Oct. 21, 1947, aged 65, of coronary thrombosis.

Elmer Cleo Ambrose * Trenton, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1918; member of the American Academy of Ophthalmology and Otolaryngology; specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology; served during World War I; affiliated with Wright and Cullers hospitals; died in Washburne Point-Lake of the Ozarks, Oct. 15, 1947, aged 55, of coronary occlusion.

Elmer Lawrence Apple, Goldengate, Ill.; Hospital College of Medicine, Louisville, Ky., 1898; died October 23, aged 72, of angina pectoris.

Garnell Bailey, Evanston, Ill.; Meharry Medical College, Nashville, Tenn., 1931; died in the Evanston Community Hospital recently, aged 44, of hypertension.

William Harry Baker, West Buxton, Maine; Medical School of Medicine, Portland, 1901; member of the American Medical Association; died in Maine General Hospital, Portland, recently, aged 69, of hypertensive and arteriosclerotic heart disease and cellulitis.

Gill Wyeth Blackshear * Opelika, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1923; died Oct. 26, 1947, aged 49, of a fractured skull inflicted when thrown from a horse.

Milton Ralph Bookman, Los Angeles; Columbia University College of Physicians and Surgeons, New York, 1906; fellow of the American College of Surgeons; formerly affiliated with the Home for Hebrew Infants and the Lebanon Hospital in New York; died Oct. 4, 1947, aged 61, of coronary disease.

Warren Augustus Brewster, Callahan, Fla.; Medical College of Georgia, Augusta, 1900; member of the American Medical Association; died in Fernandina Oct. 13, 1947, aged 73, of angina pectoris and uremia.

James Henry Brooks, Decatur, Ga.; Atlanta College of Physicians and Surgeons, 1899; died recently, aged 79, of cerebral hemorrhage and arteriosclerosis.

Herbert Warren Canfield, Baxter, Iowa; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1903; died in Newton Oct. 29, 1947, aged 70, of coronary thrombosis.

Bert B. Clark, New York; New York Homeopathic Medical College and Hospital, New York, 1899; died Oct. 5, 1947, aged 75.

Donald Lee Colglazier @ Indianapolis; Indiana University School of Medicine, Indianapolis, 1930; served during World War II; on the staff of the Methodist Hospital; died Oct. 16, 1947, aged 47, of carcinoma.

Wilfred Leslie Cooper, Los Angeles; Detroit College of Medicine, 1902; affiliated with the French Hospital; died Oct. 19, 1947, aged 71, of cerebral hemorrhage followed by coronary thrombosis.

Howard Clifton Crane, Kilbourne, Ohio; Starling Medical College, Columbus, 1894; died in the University Hospital, Columbus, recently, aged 83.

John Allen Crawshaw, Hanford, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; member of the American Medical Association; for many years health officer; died Oct. 18, 1947, aged 68, of internal hemorrhage.

Andre Alexander Cueto, Fort Lauderdale, Fla.; University of Cincinnati College of Medicine, 1934; member of the American Medical Association; died recently, aged 42, of coronary thrombosis.

William Loren Curtiss, Benton Harbor, Mich.; Eclectic Medical Institute, Cincinnati, 1895; Rush Medical College, Chicago, 1899; died Oct. 13, 1947, aged 79, of myocardial degeneration.

Henry Cecil Drew, Washington, D. C.; Georgetown University School of Medicine, Washington, 1909; served during World War I; for many years associated with the Veterans Administration; died Oct. 31, 1947, aged 61, of chronic endocarditis and hypertension.

Oscar F. Eckel, Asheville, N. C.; Medical College of the State of South Carolina, Charleston, 1906; past president of the Buncombe County Medical Society; member of the American Medical Association; for many years on the staff of the Mission Hospital; died Oct. 24, 1947, aged 68, of coronary thrombosis.

Harold Alexander Elder, Blowing Rock, N. C.; University of Pittsburgh School of Medicine, 1921; member of the American Medical Association and the Medical Society of the State of Pennsylvania; died recently, aged 53.

Henry Randall Elliott, Washington, D. C.; University of Virginia Department of Medicine, Charlottesville, 1895; associate professor in physiology at George Washington University; served on the staffs of the Emergency, Garfield and Doctors hospitals; died in University Heights, Ohio, Nov. 3, 1947, aged 73, of cerebral hemorrhage.

George I. Forbes, Burlington, Vt.; New York Homeopathic Medical College and Hospital, New York, 1893; member of the American Medical Association; served as member and treasurer of the state board of medical registration; affiliated with the Mary Fletcher and the Bishop De Goesbriand hospitals in Burlington and the Fanny Allen Hospital in Winooski; died Oct. 15, 1947, aged 82, of arteriosclerosis.

Augustus Harris Frye @ Griffin, Ga.; Atlanta Medical College, 1914; also a graduate in pharmacy; served overseas during World War I; died in Belfast, Maine, recently, aged 54, of heart disease.

James Frank Garrett, Greenville, S. C.; Medical College of the State of South Carolina, Charleston, 1922; member of the American Medical Association; died Oct. 2, 1947, aged 51, of heart disease.

Percy Emerton Gilbert @ Madison, Maine; Medical School of Maine, Portland, 1906; served on the staffs of the Presque Isle (Maine) General Hospital and the Franklin County Memorial Hospital in Farmington; died Nov. 1, 1947, aged 71, of cardiovascular disease and interstitial nephritis.

Albert Jefferson Green, Fairburn, Ga.; Emory University School of Medicine, Atlanta, 1916; member of the American Medical Association; died in Atlanta Oct. 23, 1947, aged 65, of pulmonary embolus.

Joseph Grice @ Portsmouth, Va.; University of Virginia Department of Medicine, Charlottesville, 1893; served as medical director of the city schools; died in the King's Daughters' Hospital Oct. 21, 1947, aged 78.

Frank Wood Hanford @ Los Angeles; Bennett Medical College, Chicago, 1905; served during the Spanish-American War and World War I; formerly on the staff of St. Anthony's Hospital in Rockford, Ill.; died in Birmingham Veterans Administration Hospital in Van Nuys, Calif., Oct. 29, 1947, aged 78, of coronary disease with infarction.

Howard Chapin Hanscom, West Boothbay Harbor, Maine; Columbia University College of Physicians and Surgeons, New York, 1900; at one time affiliated with the Western Maine Sanatorium in Greenwood Mountain; served as director of the bureau of institutional service, state department of health and welfare, in Augusta; died recently, aged 72, of heart disease.

Howard Elmer Johnson, Bird Island, Minn.; University of Minnesota Medical School, Minneapolis, 1942; member of the American Medical Association; interned at the Charles T. Miller Hospital in St. Paul; affiliated with Rice Memorial Hospital in Wilmar; died Oct. 26, 1947, aged 36, of coronary thrombosis.

John F. Kerr, Shelby, Ohio; the Hahnemann Medical College and Hospital, Chicago, 1881; died recently, aged 91, of senility.

William James Luxford, Decatur, Neb.; John A. Creighton Medical College, Omaha, 1909; died recently, aged 74.

Oliver McEuen, Hemingford, Neb.; St. Louis College of Physicians and Surgeons, 1889; died recently, aged 81.

Alton Terrill Peay, Signal Mountain, Tenn.; University of Nashville (Tenn.) Medical Department, 1889; Vanderbilt University School of Medicine, Nashville, 1889; died recently, aged 82, of senility.

Word Redwine, Madras, Ga.; Atlanta Medical College, 1895; died recently, aged 75, of cardiorenal disease.

Robert Gordon Rhoda, Allentown, Pa.; Jefferson Medical College of Philadelphia, 1947; served during World War II; intern at the Allentown General Hospital, where he died Oct. 23, 1947, aged 25, of poliomyelitis.

John Wagmon Rudder, Toxey, Ala.; University of Nashville (Tenn.) Medical Department, 1907; member of the American Medical Association; died Oct. 27, 1947, aged 65, of cerebral hemorrhage.

Thomas Littleton Savin, Little Rock, Ark.; University of Maryland School of Medicine, Baltimore, 1897; member of the American Medical Association; died in the Baptist State Hospital Oct. 3, 1947, aged 72, of lymphatic leukemia.

Frederick J. Schmoldt @ Cleveland; Western Reserve University Medical Department, Cleveland, 1898; member of the Cleveland Academy of Medicine and the Cleveland Medical Library; on the staff of St. Alexis Hospital, where he died Oct. 16, 1947, aged 74, of hypertension.

Felix Herbert Schubert, Los Angeles; College of Medical Evangelists, Los Angeles, 1934; member of the American Medical Association; affiliated with the Physicians and Surgeons Hospital and the Glendale Sanitarium and Hospital, where he died recently, aged 43, of uremia, hypertension and nephrosclerosis.

Hugo Paul Siekert @ Milwaukee; Marquette University School of Medicine, Milwaukee, 1916; affiliated with St. Anthony's Hospital; died recently, aged 55, of coronary thrombosis.

Matthew A. Stewart, Heavener, Okla. (licensed in Oklahoma under the Act of 1908); died recently, aged 71.

Melville Abbott West, Cheney, Wash.; University of Oregon Medical School, Portland, 1914; served as city health officer; affiliated with St. Luke's Hospital in Spokane; died Oct. 19, 1947, aged 63, of arteriosclerosis and heart disease.

John Rufus Wilson, Terre Haute, Ind.; Northwestern University Medical School, Chicago, 1892; College of Physicians and Surgeons, Keokuk, Iowa, 1898; member of the American Medical Association; died in St. Anthony's Hospital Oct. 27, 1947, aged 78, of bulbar paralysis and cerebral sclerosis.

W. Lewis Wilson @ Niagara Falls, N. Y.; New York Homeopathic Medical College and Hospital, New York, 1904; died recently, aged 70, of pulmonary edema.

Joseph Walker Wynne @ Newbern, Tenn.; Vanderbilt University School of Medicine, Nashville, 1894; died recently, aged 78, of tuberculosis.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 13, 1947.

Research on the Common Cold

A research project on the common cold, set up by the Medical Research Council and the Ministry of Health, has been conducted for eighteen months by experiments with human volunteers on a scale never equaled in any other country. So far 500 volunteers, men and women, have taken part; even honeymoon couples have been among those who have submitted to the tests. The research has a twofold aim: to identify beyond doubt the nature of the virus causing the common cold, and to establish how colds are transmitted from person to person. Already two important discoveries have been made. It has been established that the size of the type of virus which causes colds is roughly 0.0001 mm., which is about the size of the influenza virus. It is too small to be seen through the most powerful microscope in this country, and its size has to be estimated through special filters. New facts have been elucidated about the conditions under which the virus preserves its activity. For example, it can withstand freezing temperatures as low as minus 70 C.

EFFORTS TO GROW THE VIRUS HAVE FAILED

Research has been concentrated on trying to grow the virus in the laboratory on eggs, but has proved unsuccessful. For long term research of this type a regular flow of volunteers is necessary, so that interruption of the work is avoided. Volunteers are accommodated in groups of 24. They live in pairs in complete isolation from other human contacts for ten days. Before the test each must be free from any symptoms of a cold. They then have instilled into the nose drops of carefully prepared fluid, which in some cases is believed to contain the cold virus. Then a close check is kept to see whether or not colds develop. On an average 1 of every 3 volunteers contracts a cold. None has been of a serious kind.

There is little difficulty in getting students as volunteers during university vacations, but for other periods volunteers are not so easy to get. Next year several hundreds are wanted. Normally persons of either sex between the ages of 18 and 40 are required. These volunteers get ten days' free holiday with 75 cents pocket money. They can go for walks or play games. Many have liked the experience so much that they have come back for a second and even for a third visit. This is allowed after a six months' interval. Application forms with full details of the test and dates are supplied on request.

Sherrington's Ninetieth Birthday

Sir Charles Sherrington, the eminent neurophysiologist, attained his ninetieth birthday on November 27. His crowning work, "The Integrative Action of the Nervous System," marks an advance in the physiology of the nervous system which has been compared to that due to Harvey's "De Motu Cordis" and Newton's "Principia." At the Physiological Congress held in England earlier in the year a new printing of Sherrington's great work was presented to all the members. In celebration of his ninetieth birthday the *British Medical Journal* has published a series of articles, which begin with "Sherrington's Impact on Neurophysiology" by Professor John F. Fulton of Yale. He points out that Sherrington's paper, "On the Anatomical Constitution of Skeletal Muscles," published in 1894, laid the foundation of knowledge of what he later termed "the proprioceptive system." Previously textbooks on anatomy had assumed that

all nerves going to muscle were motor. The early phases of Sherrington's work culminated in his Stillman Lectures at Yale University in 1904 under the title, "The Integrative Action of the Nervous System." There he introduced a host of new terms and phrases which have become current in modern neurophysiology—synapse, proprioceptive and nociceptive. His concept of integrative action revived the Hughlings Jackson concept of release of function to account for decerebrate rigidity and the rigidity of hemiplegia.

The philosophic implications of Sherrington's studies on the nervous system have often been discussed, but he remained almost stubbornly silent on the subject until his Rede lectures delivered at Cambridge in 1933. He returned to the subject in his foreword to the 1947 edition of "The Integrative Action of the Nervous System." He wrote: "In all those types of organism in which the physical and the mental coexist, each of the two achieves its aim only by reason of a *contact utile* between them. And this liaison can rank as the final and supreme integration completing its individual. But the problem of how that liaison is effected remains unsolved; it remains where Aristotle left it more than two thousand years ago."

PARIS

(From Our Regular Correspondent)

Dec. 10, 1947.

Treatment of Syphilis in France

The treatment of syphilis in France has undergone modifications, which have not, however, changed the general method of treating syphilis as established by solid experience. Professors H. Gougerot and R. Degos, at the conference of the International Union Against Venereal Disease, stated that three principal methods are equally favored by French doctors: (1) arsenic-bismuth treatment, which has become classic in France; (2) bismuth preparations alone, and (3) penicillin and combined penicillin-bismuth therapy. Numerous French syphilologists prefer to exclude arsenic from the treatment of syphilis because of, first, the apparently high number of serious accidents, even deaths, provoked by the arsenicals, arsenobenzols and arsenoxides, and second, the ease of application, the innocuousness and the satisfactory results obtained from the exclusive use of a bismuth compound. R. Degos, E. Lortat-Jacob and P. Maury have just reported their first comparative results on a series of seropositive patients with primary and secondary syphilis treated with arsenicals, penicillin and bismuth compounds, alone or combined and in various doses. The best effects on the serologic titer were obtained from an initial treatment of twenty injections of a bismuth preparation in oil, three injections per week throughout the duration of the treatment: 100 per cent of patients were serologically negative after the first series of injections.

In France penicillin has been used chiefly as the first treatment of early syphilis, in most cases at a total dosage of 2,400,000 units, with 40,000 units given every three hours for seven and one-half days. Many French syphilologists increase the total dose to 3,600,000 and 4,000,000 units. The experiments of Professor Gougerot and J. Schneider have shown that the clinical results obtained on primary or secondary manifestations are the same with pure penicillin G ("specilline") as with penicillin containing no penicillin G. A negative serology is obtained quicker with penicillin G. This antibiotic constitutes a rapid initial sterilizing treatment, but its immediate effect should be followed by an intensive and prolonged consolidating treatment of many years. At present French syphilologists prefer mixed penicillin-bismuth treatments; the majority has adopted the method of Professor Gougerot (based on the clinical and experimental work of Levaditi and Vaisman): 2,400,000 units of penicillin administered in divided doses over seven and one-half days

and injections of a bismuth preparation in normal doses the first, third and seventh day. After the end of "the penicillin cure," the bismuth compound is continued at the rate of two injections per week for a total of twelve, then such initial combined treatment is followed by bismuth therapy alone.

New Test for Hypocalcemia

In a study of hypocalcemia (spasmophilia) H. P. Klotz and R. Klotz-Valensi, on Professor Bezancon's service, tried to test the strength of the parathyroids, the calcium regulators. They induced hypocalcemia in order to observe the time required to recover from it. They used estradiol benzoate to produce hypocalcemia on account of the frequency of premenstrual tetany, which has been stressed by Pende, Maranon, Richet, Coste and others. The test consists in an intramuscular or deep subcutaneous injection of 20 mg. estradiol benzoate immediately after determining the blood calcium level prior to beginning the test. An hour or two later the blood calcium is again ascertained. (The results of the test after the second hour are the more reliable.) The test made on more than 80 patients with spasmophilia showed on the average a blood calcium level 10 to 15 per cent lower in a few hours; in 1 case it was reduced 30 per cent. The test is considered positive when a 5 per cent lowering has been obtained. On nonspasmophilic subjects the blood calcium remained unchanged. On parathyroprivals induced hypocalcemia always has been exceedingly distinct and prolonged, up to twenty-four hours at times. The authors have made the test in some cases of chronic tetany after ablation of a goiter. This test has great clinical value for the diagnosis of certain forms of spasmophilia. It enables one to diagnose as hypocalcemia the disease of patients presenting themselves as cardinals or neuropaths, who are improved by recalcifying therapy (calciferol in sufficient doses). When the test is negative, it permits absolving spasmophilia in purely psychogenic or in certain epileptic crises, which were believed to be essential. The test is positive in man as well as in woman and is independent of the menstrual cycle; in children it is valid with half doses. As regards prognosis, it helps one to appreciate the seriousness of the calcium regulative difficulty by means of the duration of the calcium lowering. In chronic tetany related to surgical or idiopathic hypoparathyroidism the lowered level persists twenty-four hours during the first months and becomes transitory in the course of improvement. Research is in progress on the physiopathologic interpretation of induced hypocalcemia.

Congress on Hygiene of Schools and Universities

Under the presidency of Professor Lesne, Great Britain, Netherlands, Belgium, Denmark, Sweden, Switzerland, Italy, Roumania, Iran, Egypt, the United States, Argentina, Brazil, Colombia and Canada sent official representatives to the Congress on Hygiene of Schools and Universities. On the agenda were: pupils' growth disorders during and after the war; rational organization of school work in secondary, high and technical schools; alimentation at school; corrective gymnastics, and the detection of tuberculosis by radiologic examinations. On all these subjects French and foreign delegates made reports and communications. The congress passed the following resolutions:

1. *General Hygiene.*—To protect sleep and the need for movement, shorten the classes, increase recreation and divide holidays more appropriately; to prohibit the meeting of adults in the schools, to lighten the programs of studies and to better living conditions of students.
2. *Special Hygiene.*—To increase the teaching for deficient pupils by increasing the special classes.
3. *Dental Hygiene.*—To detect dental decay in school children.
4. *Alimentary Hygiene.*—To improve canteens and in general provide a supplementary diet.

Delegates from the nineteen countries that were represented voted to create the International Association of School Hygiene.

Professor Lesne was elected president and Dr. Delthil, general secretary. The latter proposed that the International Association have its headquarters in Paris. International Congresses will be periodically organized.

BUENOS AIRES

(From Our Regular Correspondent)

Dec. 10, 1947.

Experimental Bronchogenic Emphysema

In continuance of earlier experimental and clinical work, Professors M. R. Castex and E. S. Mazzei and Drs. J. M. Remolar and E. S. Pedace have been able to produce bronchogenic emphysema in dogs, using the method of John R. Paine (*J. Thoracic Surg.* 10:150, 2, [Dec.] 1940) with slight modification. Following experiments on 16 dogs, they conclude that pulmonary emphysema can be obtained in various degrees and that it reproduces the different stages which are observed in the human clinic, viz., alveolar dilatation, anatomic emphysema and also ampullary emphysema. These different stages and grades depend more on the intensity of the respiratory obstructive process than on the time of its evolution. If this experimental emphysema is accentuated and generalized, it is characterized by the symptoms of dyspnea corresponding to the degree of the obstruction. When the respiratory obstruction is more extensive, the emphysematous lesions are also greater and more generalized and appear earlier. The heart of the dog with experimental emphysema exhibits almost constantly changes in anatomic structure which reproduce in different degrees those which in the human being are found in the chronic pulmonary heart (enlargement and right ventricular dilation).

In these experiments, the ampullary emphysema and the chronic pulmonary heart were produced experimentally for the first time.

Argentine Congress of Tuberculosis

The Argentine Congress of Tuberculosis assembled with Professor Raúl Vaccarezza, of the Medical Faculty of Buenos Aires, as president. In his inauguration speech he stressed that tuberculosis is rapidly and distinctly diminishing. The decrease is so considerable that Dublin has prognosticated that in 1960 there will not be any more tuberculosis in the United States. According to Dr. Vaccarezza, the mortality per hundred thousand in the United States was 200 in 1900 and 40 in 1945, and in Argentina, 182 in 1921 and 93 in 1941. He said that in the whole Argentine Republic there are some 400,000 persons with active tuberculous lesions; 160,000 of them are aware that they are ill, but the others do not know it. Furthermore, it has been estimated that in 1936 the economic loss caused by the known patients was 280,000,000 pesos; this does not count the unknown tuberculous persons nor include the expenses for social protection of the patient's family or those of the institutions for prophylaxis and prevention.

The official subjects of the meeting were rehabilitation of the tuberculous patient, hematogenous tuberculosis and thoracoplasty for the treatment of tuberculosis of lungs. In continuation of this congress the Argentine Society for Tuberculosis held a two day meeting on treatment of cavities of the inferior lobes and lung resections for tuberculosis.

Congress of Obstetrics and Gynecology

The Argentine and Uruguayan specialists assembled for three days in Buenos Aires. The first two reports were on "The Actual Value of Surgery in Uterine Retrodisplacements" and "The Actual Value of Biologic Tests for the Diagnosis of Pregnancy." Other main subjects were "The Value of Methods of Induction of Parturition" and "The Value of Penicillin Therapy in Gynecology."

Correspondence

VENTRICULAR FIBRILLATION ABOLISHED BY ELECTRIC SHOCK

To the Editor:—The case report, "Ventricular Fibrillation of Long Duration Abolished by Electric Shock," by Beck, Pritchard and Feil (*THE JOURNAL*, Dec. 13, 1947, p. 985) describes a rare and remarkable accomplishment in operating room therapeutics. It is also, however, a clear example of the misuse of a cardiac glycoside in the operating room.

There has long been great need for better understanding of the value and effects of digitalis preparations in the patient undergoing anesthesia and operation. Their abuse in the treatment of peripheral circulatory failure is notoriously common as part of the "medical last rites." So is their application for resuscitation during any type of anesthetic accident. But the case reported is the first I have encountered in which a digitalis preparation has been used to decrease a tachycardia under anesthesia with the result that a near fatal ventricular fibrillation was produced by the cardiac glycoside, lanatoside C. The errors, as I see them, are the following:

1. The use of a cardiac glycoside was not indicated for the slowing of a tachycardia of 160 during induction with nitrous oxide and ether of anesthesia in a patient 14 years of age with a heart slightly displaced in a severe congenital funnel chest, dyspnea on exertion, normal venous pressure and circulation time. The tachycardia might have been due to anoxia or respiratory obstruction during the administration of the anesthetic or to excessive sympathetic nervous activity excited by induction of anesthesia without adequate sedative premedication. Ether per se may stimulate such hyperactivity; or atropine premedication may permit the escape of a sinus tachycardia. If the tachycardia was thought to be due to acute heart failure during induction, the operation, being elective, should have been postponed. If the tachycardia was due to a paroxysm of auricular fibrillation, again the operation should have been postponed; if it could not be postponed then the lanatoside C should have been administered in fractions of the complete dose with the ventricular rate as a guide to additional doses. If the tachycardia was regular and of sinus origin, as it probably was, then a cardiac glycoside was not indicated. "In the light of present data it may be said that with few exceptions slowing of the normally beating heart from direct action at the pacemaker of digitalis in therapeutic amounts is so slight as to be negligible, if indeed it occurs" (Luten, D.: *The Clinical Use of Digitalis*, Baltimore, Charles C Thomas, 1936, p. 48). "Since the attainment of clinical results from the direct sinus action of digitalis in therapeutic amounts is problematical, aside from the propriety of trying to induce them, it is obvious that no indication exists for obtaining such effects" (Luten, p. 49). "Large toxic doses can notably depress the sinus node leading to conspicuous cardiac slowing" (Movitt, E. R.: *Digitalis and Other Cardiotonic Drugs*, New York, Oxford University Press, 1946, p. 29). "The sinus slowing reported in many cases both in children and in adults, as an expected result of therapeutic action, is in fact a manifestation of toxic effect . . . with few exceptions slowing of the normally beating heart from therapeutic amounts of the drug is inconspicuous, and . . . greater degrees of slowing occur only with excessive dosage" (Luten, p. 63). It appears that these statements apply accurately to this case. The prompt effect of the lanatoside C in slowing the heart rate to 80 confirms the belief that a toxic dose was administered at the beginning of the operation.

2. If it be granted that a cardiac glycoside was required, the adult dose of 1.6 mg. of lanatoside C was obviously

excessive for a boy aged 14, even though he was large for his years.

3. The appearance of ventricular fibrillation after two hours, during the closure of the wound, was not recognized as a toxic effect of the overdose with lanatoside C. Yet it should have been no surprise in view of the fact "that ventricular fibrillation in human beings occurs from poisonous doses of digitalis . . . that it is a common result in cases of fatal poisoning from the drug, and that it is the ultimate cause of death in many of the instances of sudden death occurring unexpectedly in patients after large doses of digitalis" (Luten, p. 64). The arrival of ventricular fibrillation approximately two hours after injection of lanatoside C coincides with observations that the maximum effects of intravenous lanatoside C in normal subjects appear in one to six hours (Movitt, p. 94) and in patients with congestive failure in two to three hours (Movitt, p. 94).

4. The administration of epinephrine intravenously during cardiac resuscitation is of doubtful value. But the dose of 1 mg. is certainly excessive for this route and is dangerous, especially for the digitalized patient, since "it has been shown that only half of the usual lethal dose of adrenalin is necessary to kill animals receiving nonlethal doses of digitalis" (Movitt, p. 56). It is apropos to mention here that degenerative changes in the myocardium produced by toxic doses of digitalis are potentiated by adrenalin (Movitt, p. 56).

5. The administration of another dose of lanatoside C at the time of cardiac resuscitation demonstrated ignorance of the foregoing facts and exemplified the classical misuse of digitalis bodies for "circulatory stimulation" during circulatory mishaps associated with anesthesia and surgery.

The educational merit of the published case is greater than intended by the authors. Their clear reporting truly illustrated the latest advances in cardiac resuscitation. It also, however, demonstrated the importance of (a) accurate diagnosis of the cause of a physiologic disturbance during anesthesia, (b) proper therapy of a disturbed physiologic state during anesthesia and operation and (c) adequate knowledge of digitalis and digitalis-like bodies, particularly as they are related to other drugs employed during anesthesia.

BARNETT A. GREENE, M.D., Brooklyn.

THE NURSE ANESTHETIST

To the Editor:—At the recent meeting of the Southern Surgical Association, which was held in Hollywood, Fla., Dec. 9, 10 and 11, 1947, the following resolution was passed unanimously by the Association:

"Although the Southern Surgical Association has been and always will be extremely interested in the advancement of all medical sciences, and particularly in anesthesia because of complete dependence on safe anesthesia for the safe performance of a surgical procedure, it, the Southern Surgical Association, heartily disapproves of the publicity given by certain newspapers and popular lay magazines to the statements sponsored by a group of anesthesiologists who are seeking to discredit the well trained nurse anesthetist and to compel surgeons to operate only if anesthetics are administered by physician-anesthetists.

"This attempt to persuade the public that there is grave danger in a surgical operation if the anesthetist is not a certified medical specialist is already decreasing the number of efficient well-trained nurse anesthetists and forcing surgeons to perform recently developed complicated operations with anesthetics administered by young hospital interns or general practitioners, neither of whom have special training or experience in the administration of an anesthetic."

ALFRED BLALOCK, M.D., Baltimore.
Secretary, Southern Surgical Association.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in THE JOURNAL, Jan. 17, page 204.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 22-24, 1948. Sec., Dr. G. G. Gill, 519 Dexter Ave., Montgomery 4.

ALASKA: * *Examination.* Juneau, March 2. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARKANSAS: * *Examination.* Little Rock, June 3-4. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Eclectic:* Little Rock, June 3. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral.* San Francisco, June 5-6; Los Angeles, Feb. 28-29. *Written Examination.* Los Angeles, March 1-4. *Oral and Clinical Examination for Foreign Graduates.* Los Angeles, Feb. 29; San Francisco, June 6. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

CONNECTICUT: * *Examination.* March 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homopathic Examination.* Derby, March 9-10. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

DISTRICT OF COLUMBIA: * *Reciprocity.* Washington, D. C., March 8. Sec., Commission on Licensure, Dr. G. C. Ruhland, 4130 E Municipal Bldg., Washington.

FLORIDA: * *Examination.* Jacksonville, June 29-30. *Reciprocity.* Jacksonville, June 28. Sec., Dr. Harold D. Van Schaick, 6675 Windsor Lane, La Gorce Island, Miami Beach 41.

INDIANA: *Examination.* Indianapolis, June 1948. Sec., Board of Medical Registration and Examination, Dr. Paul R. Tindall, K of P Bldg., Indianapolis.

IOWA: * *Examination.* Iowa City, March 15-17. Comm., Dr. Walter L. Bierring, Dept. of Health, Des Moines.

KANSAS: Kansas City, June 9-10. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: *Examination.* Louisville, June 16-18. Sec., Dr. P. E. Blackerby, 620 S. 3d St., Louisville.

MAINE: Portland, March 9-10. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.

MARYLAND: *Medical Examination.* Baltimore, June 15-18. Sec., Treas., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homopathic Examination.* Baltimore, June 15-16. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, March 9-12. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413 E State House, Boston.

MISSISSIPPI: Jackson, June 1948. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, April 5-7. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEVADA: Carson City, May 3. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: *Examination.* Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, June 15-17. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW YORK: *Examination.* Albany, Buffalo, New York, Syracuse, Feb. 16-19. Sec., Dr. J. L. Lochner, Jr., Education Bldg., Albany.

OHIO: *Endorsement.* Columbus, April 6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

SOUTH CAROLINA: *Written Examination.* Columbia, June 21-23. *Endorsement.* Feb. 2. Sec., Dr. N. B. Heyward, 1329 Blinding St., Columbia.

TEXAS: Austin, Feb. 19-21. Asst. Sec., Mrs. Laura McElroy, 918-20 Texas Bank Bldg., Dallas 2.

UTAH: *Examination.* Salt Lake City, June, 1948. Asst. Dir., Department of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VIRGINIA: *Examination.* Richmond, June 18-19. *Endorsement.* Richmond, June 17. Sec., Dr. K. D. Graves, 306 Medical Arts Bldg., Roanoke.

VERMONT: *Examination.* Burlington, Feb. 5-6. Sec., Dr. F. J. Lawliss, Richford.

WYOMING: *Examination.* Cheyenne, Feb. 2. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau, Feb. 23-29. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

DISTRICT OF COLUMBIA: *Examination.* Washington, April 19-20. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington.

FLORIDA: *Examination.* June 5. Final date for filing application is May 23. Sec., Mr. M. W. Emmel, Univ. of Florida, Gainesville.

IOWA: Des Moines, April 13, July 13, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

OKLAHOMA: Spring 1948. Sec., Dr. Frank Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, March 6. Sec., Basic Science Examining Committee, Mr. C. D. Byrne, Univ. of Oregon, Eugene.

WISCONSIN: *Examination.* Madison, April 3. Sec., Dr. W. H. Barber, Scott & Watson Sts., Ripon.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Vaccination by Nurse as Unlicensed Practice of Medicine.—Defendant was charged with the unlicensed practice of medicine and with an assault in the third degree. Her motion for a dismissal of the charges was heard in the magistrate's court of the city of New York, felony court.

The defendant, allegedly a practical nurse, set up quarters in a bar and grill in the city of New York and, while professing to inject persons with vaccine serum, injected some 500 persons from a syringe containing water. A police officer happening to pass the establishment and observing the proceedings approached the defendant and took the needle from her hand. He gathered up several other needles, some from a pot on the stove in the rear of the restaurant where they were being apparently sterilized in water. The defendant told the police officer that she had worked as a practical nurse and that she was vaccinating the persons in line. She later admitted to the officer that she was using merely water for inoculating purposes and not any serum whatever. She made the further statement that she had had no purpose other than wanting to impress her boy friend with her efficiency as a nurse; they had had some disagreement and she felt, to use her words, "that she would make a hit with him." She further made the startling statement that during two days she had vaccinated five hundred persons by inoculation.

The defense contended that there was no violation of the education law in that the acts committed by the defendant did not amount to the practice of medicine. Section 1250, subdivision 7, of the education law reads: "The practice of medicine is defined as follows: A person practices medicine within the meaning of this article, except as hereinafter stated, who holds himself out as being able to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition, and who shall either offer or undertake, by any means or method, to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition." It is argued that the vaccination was not a diagnosis, an operation, a treatment or a prescription and further that all of the aforesaid terms presupposed the existence of human disease or disorder. Treatment, said the court, is a very general term. Vaccination is a treatment given to a human being, even though no disease is present, to prevent disease on the assumption that human beings are susceptible to disease particularly of the contagious kind such as smallpox. It is treatment as well as preventive medicine. In our modern age the great progress of science is evidenced among other things by preventive medicine, which is adopted even before disease makes its appearance and precisely to bar it from the human organism. That, too, must be construed to be the practice of medicine. The purpose of the statutes in the education law concerning the practice of medicine is to protect not merely the profession but also the general public.

The defendant herein held herself out, the court continued, as qualified to give those whom she injected such treatment as would prevent smallpox. She was not a duly qualified or licensed physician. It may be argued here, said the court, that the defendant did not practice medicine for the very reason that she was perpetrating a hoax. The gravamen is in having held herself out as qualified and as intending to offer proper treatment. She lulled persons into a sense of security when they needed and sought such treatment from her, relying on her false pretenses. That is the theory on which the quacks and other unlicensed persons have been convicted. That in this instance the fraud was greater cannot destroy the principle of "pretending to protect the public from falling into the hands of the unauthorized, who cannot or will not offer proper treatment." It was not essential for the defendant to claim to be a physician to bring her acts within the statute. She held herself out as qualified when she offered to perform the acts recited in the complaint.

It is further contended that the defendant cannot be guilty of assault of the third degree as the defendant did not intend any bodily harm, since the injection of water was harmless and since her acts were committed with the consent of the persons allegedly assaulted. At the time the defendant vaccinated several persons, she knew that there was fear of an epidemic and that the health commissioner of the city had been so concerned with its potentialities that he had himself, as well as the mayor of the city and many other agencies, urged the people to submit to vaccination. Five hundred, evidently very simple persons, had applied to the defendant herself when she set up quarters in a bar and grill with syringe and other apparatus to perform what might have been a tragic hoax on innocent persons and only to impress her boy friend. She knew they were not being immunized and she knew that it was only water and not vaccine serum that had been injected. The puncturing of the body of another person with a needle in the circumstances was certainly an assault. It is true that as a rule consent, if intelligently given, is a good defense in assault. There are, however, limitations to the rule. The consent must be voluntary and intelligent. It must be free from force or fraud. Consent is the affirmative act of an unconstrained and undeceived will. The general principle seems to be also that the act performed should not exceed the extent of the terms of consent. Certainly in this instance the persons who submitted to vaccination could not consent to the perpetration of such acts as were committed by the defendant in this case. It not only subjected the person injected to violence, but it was also a menace to the community. There was no consent willfully given. The persons submitted to the defendant under the pretext of her authority and under the profession of her mission. They thought that a duly authorized person was immunizing them against a dreaded disease. It was certainly an assault under the circumstances. Accordingly the defendant's motion for dismissal of the charges was denied and the defendant was held for trial in the court of special sessions. —*People, on Complaint of Burke, v. Steinberg*, 73 N. Y. S. (2d) 475 (N. Y., 1947).

Food, Drug and Cosmetic Act: Right of Government to Seize Misbranded Device in Possession of Purchaser.—This was an action on behalf of the government to seize and possess a device found in the possession of the defendant, a private citizen, who had purchased it. From a judgment in favor of the defendant in the trial court, the government appealed to the U. S. circuit court of appeals, ninth circuit.

The federal Food, Drug and Cosmetic Act provides that "Any article of food, drug, device, or cosmetic that is adulterated or misbranded when introduced into or while in interstate commerce . . . shall be liable to be proceeded against while in interstate commerce, or at any time thereafter, on libel of information and condemned . . ." and provides further that "A drug or device shall be deemed to be misbranded . . . if its labeling is false or misleading in any particular." It was undisputed, said the court of appeals, that the article in question

—a so-called Spectro-Chrome—was an instrument, apparatus, or contrivance intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease of man and hence was a device, within the meaning of the food and drug act. The article was transported in interstate commerce in June 1945. When the article was introduced into and while it was in interstate commerce, its labeling was false and misleading. Hence the article was misbranded, within the meaning of the act, when introduced into and while in interstate commerce. This proceeding was commenced in July 1945 after the article had been purchased by the defendant and was therefore no longer in interstate commerce. That fact, said the court of appeals, is immaterial. Having been misbranded when introduced into and while in interstate commerce, the article was liable to be proceeded against and condemned at any time thereafter.

It is immaterial, continued the court, that the defendant purchased and paid for the article, had it in his home, was satisfied with it and desired to keep it. It is likewise immaterial that the article was not inherently dangerous or harmful, that the defendant did not intend to use it commercially or to permit its use by persons other than himself and his mother and brothers, all of whom were over 21 years of age, and that defendant believed that he and his mother had been benefited by its use. Such facts could not and did not exempt the article from the provisions of the federal act. It was contended that the defendant had a right to prescribe for himself and to "seek to cure himself of physical ailments by any means he chooses, so long as the means chosen is not inherently dangerous or harmful." Such a right, said the court, if it exists, is subordinate to the rights of the government under the act.

The judgment of the trial court in favor of the defendant was therefore reversed.—*United States v. Olsen*, 161 F. (2d) 669 (1947).

Hospitals: Accrual of Action for Wrongful Death Due to Negligence.—This was an action for damages for the wrongful death of the plaintiff's husband caused by the alleged negligence of the defendant hospital. From a judgment in favor of the plaintiff, the defendant appealed to the Supreme Court of Florida.

The deceased was injured on Aug. 27, 1942, entered the hospital the next day and was discharged September 10. He returned to the hospital on Sept. 15, 1942 and died the following day of tetanus resulting from the injury. The negligence alleged to have resulted in death is that reasonable and proper care of the deceased required that he be given tetanus antitoxin but that the defendant failed to give this treatment. The Florida statutes require that "an action arising upon account of an act causing a wrongful death" shall be commenced within two years, and this action was commenced Sept. 12, 1944, within two years of the death but not within two years of the alleged negligent conduct. The question, therefore, said the court, is, does the statute of limitations in a death case commence to run from the date of the wrongful act or from the date of death?

The Supreme Court cited a statement from American Jurisprudence (16 Am. Jur., Sec. 167) saying that the point of time which marks the commencement of the running of a statute limiting the right of action for death by wrongful act is a matter that must be determined generally from the provisions of the statute creating the limitation, but that the general rule is that the cause of action accrues and the statute runs from the time of the death. The plaintiff's cause of action, continued the court, is dependent on death, and it is our conclusion that it was the intent of the Florida statute to limit the commencement of the action from the time of the accrual of plaintiff's cause. Plaintiff's cause of action did not accrue by reason of the wrongful act alone; it took a wrongful act plus death to give the plaintiff a cause of action. The statute of limitations therefore commenced to run at the time of death. Accordingly the judgment in favor of the plaintiff was affirmed.—*St. Francis Hospital, Inc. v. Thompson*, 31 So. (2d) 710 (Fla., 1947).

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

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- Leukoplakia of Vulva: Preliminary Report. N. F. Miller, M. H. Parrott, Joan Stryker and others.—p. 543.
- Studies on Human Corpus Luteum: Histologic Variations in Corpora Lutea and in Corpus Luteum. Endometrial Relationships at Onset of Normal Menstruation. J. I. Brewer and H. O. Jones.—p. 561.
- *Correlation Between Vaginal Smear and Tissue Diagnosis in 1,045 Operated Gynecological Cases. N. P. Isbell, J. F. Jewett, M. S. Allan and A. T. Hertig.—p. 576.
- Relationship Between Erythrocyte Sedimentation Rate, Sludged Blood, and Plasma Proteins During Pregnancy. L. D. Odell, Gloria T. Aragon and R. E. Pottinger.—p. 596.
- Vitamin B Complex, Menorrhagia and Cancer: Critical Review. R. R. Greene and B. M. Peckham.—p. 611.
- Pregnancy Associated with Diabetes. L. M. Raudall.—p. 618.
- Treatment of Carcinoma of Vulva. J. L. McKelvey.—p. 626.
- Characteristics of Uterine Bleeding Following Cyclic Oral Therapy with Estrogen and Progesterone. J. W. Goldzieher, L. W. Haus and E. C. Hamblen.—p. 636.
- Management of Prolonged Labor: Four-Year Review from the Lewis Memorial Maternity Hospital. H. E. Schmitz, J. N. Bremner, Janet E. Towne and G. R. Baba.—p. 643.
- Fetal and Maternal Mortality: An Eleven Year Survey. N. S. Assali and L. F. Zacharias.—p. 651.
- Graphic Method of Prognosis for Infant in Antenatal Care of Rh-Isomized Pregnant Women. T. Primrose, G. J. E. van Dorsser and N. W. Philpott.—p. 662.
- Relationship Between Cervical Mucus and Basal Temperature Cycles. W. T. Pommerenke and Ellenmae Viervogel.—p. 676.
- Postpartum Headache After Low Spinal Anesthesia in Vaginal Delivery and Its Treatment. F. Weintraub, W. Antine and A. J. Raphael.—p. 682.
- Vaginal Hysterectomy Subsequent to Extraperitoneal Cesarean Sections. E. G. Waters.—p. 687.
- *Evaluation of Two-Hour Rat Test for Pregnancy. P. H. Fried.—p. 689.
- Method of Delivery for Hydrocephalus Associated with Breech Presentation. D. N. Danforth.—p. 694.
- Full-Term Pregnancy Following Operation for Congenital Absence of Vagina. J. L. Baer and E. J. DeCosta.—p. 696.
- Bilateral Simultaneous Tubal Pregnancy. L. R. Gorman.—p. 698.

Vaginal Smears and Tissue Diagnosis.—Isbell and his associates report on 1,045 vaginal smears and the corresponding uterine, cervical and/or vaginal tissue sections. In 1,000 of these cases 60 cancers of the uterus, cervix or vagina were encountered. In 40 cases of carcinoma of the cervix, 39 smears were positive and 1 was not. In 18 cancers of the uterus, 15 smears were positive and 3 were negative. Two carcinomas of the vagina were encountered, and in both the smears were positive. The total error of positive cases called negative was 6.66 per cent. In the remaining 940 cases with negative tissue sections there were 11 false positive vaginal smears, giving an error of 1.7 per cent. Analysis of 41 cases of definite or questionable carcinoma in situ, in which the tissue diagnosis might be considered equivocal, revealed 8 positive and 5 negative smears in 13 carcinomas of the cervix. Only 1 positive smear was found in 7 carcinomas of the endometrium. Four positive smears were encountered in 13 questionable carcinomas of the cervix. No positive smear was found in 8 questionable carcinomas of the endometrium. With regard to this last group, the authors say that the difficulty of an accurate smear diagnosis is understandable in view of the fact that this lesion is deeply situated and is thus less apt to cast off cells directly into the uterine cavity. Four incidental cancers were encountered, including one each from the bladder, urethra, vulva and fallopian tube. Positive smears in all 4 instances indicate that malignant cells from such sources may be carried into the vagina. The vaginal smear method is an accurate and valuable adjunct to a gynecologic clinic.

Two Hour Rat Test for Pregnancy.—Two cubic centimeters of an unaltered morning specimen of urine was injected intraperitoneally in divided doses of 1 cc. each into the right and left lower abdominal quadrants of an albino rat. Two hours later the animal was killed by ether asphyxiation. The test was considered negative if the ovaries were pale or pinkish and positive if one or both of the ovaries were light to dark crimson. Fried stresses the rapidity of the test, the high sensitivity as indicated by the accuracy in cases of disturbed pregnancy, the rarity of false positive tests and the great tolerance of the rat to the toxic specimens of urine. Improvements in the test are desirable, because its accuracy ranged below that of the Friedman test in normal intrauterine pregnancy. It is advisable to obviate the large number of false negative and doubtful reactions, which caused a feeling of uncertainty in reporting negative tests, and to increase the color intensity of positive reactions and lessen the need for three rats per test.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

31:569-686 (Nov.) 1947

- Venereal Disease Control During Postwar Period. J. R. Heller Jr.—p. 569.
- *Treatment of Interstitial Keratitis with Particular Reference to Results of Penicillin Therapy. J. V. Klauder.—p. 575.
- Primary Lesion of Pinta (Mal del Pinto or Carate). F. L. Blanco and O. de Laosa.—p. 600.
- Action of Disinfectant, Chemotherapeutic and Antibiotic Agents on Organism of Granuloma Inguinale. G. Rake and W. Dunham.—p. 610.
- Studies on Causal Agent of Granuloma Inguinale. R. B. Dienst, C. R. Reinstein, H. S. Kupperman and R. B. Greenblatt.—p. 614.
- *Neurosyphilis: Treatment with Penicillin Alone and with Combination of Penicillin and Malaria. A. C. Curtis, R. E. Burns and Dorothy H. Norton.—p. 618.
- Evaluation of California's Prenatal Law Requiring Serologic Test for Syphilis. A. F. Brewer and Florence E. Olson.—p. 633.
- Experimental and Clinical Studies on Oral Bismuthate (Sodium Bismuth Tritycolamate) for Systemic Bismuth Therapy. R. A. Lehman and D. W. Fassett.—p. 640.
- Qualitative Spinal Fluid Protein Determination: Comparative Study. G. W. Binkley and H. H. Johnson Jr.—p. 657.

Penicillin in Interstitial Keratitis.—Klauder treated 72 patients, 22 men and 50 women between the ages of 5½ and 46 years, who had interstitial keratitis with penicillin. Sufficient time has elapsed to evaluate the results of treatment in 59 of these patients. Forty-one of the 59 patients were given intramuscular injections of 50,000 units of commercial sodium penicillin every four hours for forty-eight consecutive doses in eight days, to a total amount of 2,400,000 units. In the remaining 18 patients the total dosage of penicillin ranged from about 0.5 million units (2 patients) to about 4 million units. The majority received about 2,000,000 units in eight days. Penicillin was well tolerated without serious untoward reactions. The Herxheimer reaction was absent after initial treatment. Twenty-five patients were given penicillin alone. Penicillin combined with eight to twelve fever rises from vaccines were given to 9 patients; penicillin, fever and chemotherapy to 21 patients, and penicillin and chemotherapy to 4 patients. Among the 25 patients treated with penicillin only, interstitial keratitis progressed favorably or was retrogressing at the time penicillin was given so that supplemental treatment was not regarded as necessary. Penicillin, like chemotherapy, did not prevent an initial attack of interstitial keratitis, or involvement of the second eye or recurrence of the disease in the previously affected eye. The absence of any striking result in the final visual acuity of the penicillin-treated patients is consistent with clinical observation that penicillin does not uniformly exert an immediate favorable effect on active interstitial keratitis. The considerable individual variation in the course of this disease is apparently not altered by penicillin therapy. Interstitial keratitis which is retrogressing at time of treatment pursues a favorable course, as do mild cases of the disease. An occasional severe case seems to be benefited. Other severe cases of the disease were definitely not improved by penicillin or any other method of treatment. Retreatment with penicillin in refractory cases does not seem to be of benefit. There was no apparent effect after the local use of penicillin. The addition of penicillin to the therapy of interstitial keratitis does not give results superior to those of other forms of treatment.

Penicillin in Neurosyphilis.—Curtis and his co-workers treated 118 patients, 77 men and 41 women, whose average age was 40.4 years and who had some type of syphilis of the central nervous system: 75 were treated with penicillin, the remaining 43 with penicillin and malaria therapy. With few exceptions penicillin was administered in equally divided doses of 40,000 units each and was given intramuscularly in aqueous solution every three hours for one hundred injections. All patients were followed for a minimum of one year. In both the clinical results and the spinal fluid picture the patients responded more satisfactorily to the combined method of treatment than to penicillin alone. Fifty-eight of the patients had either paresis or taboparesis. The more severely affected patients (30) received combined treatment and the remaining 28 were given penicillin alone. From observations made one year following treatment the impression was that penicillin combined with malaria is the treatment of choice in these types of neurosyphilis. Patients with tabes dorsalis responded equally well to penicillin or to malaria and penicillin, as revealed by observations for one year after treatment. This was supported both by clinical and spinal fluid examinations. Five patients with inactive spinal fluids failed to revert to negativity one year after treatment. Nine patients with primary optic atrophy due to syphilis were treated. Arrest of the degenerative process seemed apparent one year after treatment in 4 patients who had received penicillin alone and in 4 who were given penicillin plus malaria therapy. Progression of the optic atrophy was evident in 1 patient receiving the combined treatment. One year of observation is too short a period to serve as the basis for any definite conclusions.

Journal of Infectious Diseases, Chicago

81:97-196 (Sept.-Oct.) 1947

- Study of Production of Staphylococcal Enterotoxin in Chemically Defined Mediums. M. J. Surgalla.—p. 97.
Human Infections Caused by Lactobacilli. E. Biocca and A. Seppilli.—p. 112.
Experimental Immunization with Virus from Primary Atypical Pneumonia. M. D. Eaton and W. Van Herick.—p. 116.
Evaluation of Antibiotics by Prevention of Experimental Syphilis. G. Rake, W. B. Dunham and R. Donovick.—p. 122.
Bacterial Destruction of Thiamine. R. P. Williams and S. A. Koser.—p. 130.
Can Drosophila Flies Carry Poliomyelitis Virus? J. A. Toomey, P. P. Pirone, W. S. Takacs and M. Schaeffer.—p. 135.
Mechanism of Drug Resistance in Trypanosomes: II. Method for Differential Staining of Normal and Drug Resistant Trypanosomes and Its Possible Relation to Mechanics of Drug Resistance. F. W. Schueler.—p. 139.
Studies on Action of Penicillin: VI. Further Observations on Development of Penicillin Resistance by Meningococcus in Vitro. C. P. Miller and Marjorie Bohnhoff.—p. 147.
Studies on Immunity to Asiatic Cholera: III. Mouse Protection Test. W. Burrows, Adaline N. Mather, Marian E. Elliott and Isabelle Havens.—p. 157.
Studies on Lymphogranuloma Venereum: V. Action of Some Antibiotic Substances and Sulfonamides in Vitro and in Vivo on Agents of Feline Pneumonitis and Lymphogranuloma Venereum. Dorothy Hamre and G. Rake.—p. 175.
Epidemiologic Studies on Western Equine Encephalomyelitis and St. Louis Encephalitis in Oklahoma, 1944. W. C. Reeves, W. N. Mack and McD. Hammon.—p. 191.

Journal of Investigative Dermatology, Baltimore

9:107-160 (Sept.) 1947

- Syphilis as Field for Research by Dermatologist. H. Beerman.—p. 113.
Liver Function in Psoriasis: Preliminary Report. J. F. Madden and J. H. Barthell.—p. 125.
Sarcoidosis: I. Results of Treatment with Varying Amounts of Calciferol and Dihydratichysterol. A. C. Curtis, H. Taylor Jr. and R. H. Grekin.—p. 131.
Failure to Isolate Streptococci from 9 Cases of Pemphigus. A. C. Curtis and Jean M. Topp.—p. 151.

Calciferol and Dihydratichysterol in Sarcoidosis.—Curtis and his associates report 5 cases of sarcoidosis. One patient with multiple superficial sarcoid lesions of the skin, another with deep sarcoidosis involving skin, eyes and central nervous system, and a third with deep lesions of the skin of the forehead obtained resolution of their lesions following treatment with calciferol (vitamin D₂). A patient with sarcoid both of the skin glands and lungs was greatly improved by calciferol therapy. A patient with extensive sarcoidosis of skin, lungs and bones was greatly improved by the administration of dihydratichysterol. This agent apparently causes less calcium

absorption and more phosphorus excretion than does calciferol. If the beneficial effects of calciferol are due to its effect on phosphorus elimination, then dihydratichysterol should be at least equally as effective, if not more so. One patient was placed on a regimen using dihydratichysterol. Improvement was noted in the skin and lungs, with some regeneration of bone in the phalanges of the great toes. The authors suggest that the beneficial effect of both calciferol and dihydratichysterol is due to the tendency of such treatment to increase phosphorus excretion, thereby decreasing in the phospholipids of the tissues the phosphorus content, which may be the causative factor in the production of the epithelioid tubercles of sarcoid. Toxic reactions were present in all patients, but permanent damage was not produced.

Journal of Nervous and Mental Disease, New York 106:221-414 (Sept.) 1947. Partial Index

- Literary and Historical Contributions of Dr. Smith Ely Jelliffe. C. P. Oberndorf.—p. 228.
Avoidance of "Emotion" in Medical Literature. E. D. Bond.—p. 260.
Present Status of Neurology in the United States. H. A. Riley.—p. 262.
Psychoneuroses and Our Changing Times. R. H. Hutchings.—p. 283.
Dream Life in a Case of Transvestism, with Particular Attention to Problem of Latent Homosexuality. B. Karpman.—p. 292.
Some Applications of Psychoanalytic Concept in Treatment of Psychotic Patient. G. H. Alexander.—p. 338.
Proprioceptive Nervous System. C. J. Herrick.—p. 355.
Cerebrospinal Fluid Studies in Cerebral Concussion. M. Spiegel-Adolf, H. T. Wycis and E. A. Spiegel.—p. 359.
Experimental and Clinical Studies on Anticonvulsant Properties of Epidon (5,5-Diphenyl-2,4-Dioxo-Oxazolidinedione): Preliminary Report. M. Ellermann.—p. 369.

Kentucky Medical Journal, Bowling Green

45:393-435 (Nov.) 1947

- Practical Aspects of Psychosomatic Medicine. R. C. Blount.—p. 398.
Protruded Intervertebral Disk. F. Jelsma.—p. 401.
Some Visual Defects and Ocular Diseases the General Practitioner Ought to Know About. C. D. Townes.—p. 405.
Surgery in Mental Hospitals. C. W. Caldwell.—p. 412.
Treatment of Burns. W. E. Akin Jr.—p. 417.

SYMPOSIUM ON PLASTIC AND RECONSTRUCTIVE SURGERY

- Methods of Tissue Transfer. J. J. Wolfe.—p. 421.
Scope of Plastic Surgery. F. A. Garcia.—p. 425.
Recent Progress in Plastic Surgery. C. J. Armstrong.—p. 426.

New England Journal of Medicine, Boston

237:603-650 (Oct. 23) 1947

- Critique on Vagotomy. W. R. Moses.—p. 603.
Coccidioidomycosis in New England. E. R. H. Kurz and N. W. Loud.—p. 610.
Psychotherapy in General Medicine: Report of an Experimental Teaching Unit on a One-Hundred-Bed Medical Service. H. M. Fox.—p. 616.
Pleurodynia: Preliminary Note on an Epidemic in Boston. J. J. Finn Jr.—p. 621.
Neurology. H. H. Merritt and W. K. Jordan.—p. 623.
Progressive Alcoholic Cirrhosis of Liver.—p. 643.

Coccidioidomycosis in New England.—Coccidioidomycosis is seldom found along the Atlantic Seaboard. Kurz and Loud stress that owing to the tremendous displacement of persons from their native areas during the war, clinicians must be aware that the disease may appear in New England, particularly in persons who have seen service in areas where coccidioidomycosis is endemic. They review observations on 4 servicemen who returned to their native environment with coccidioidomycotic infections. The first patient sought treatment because of a severe ulcerative granulomatous lesion of nose and lips. Biopsy revealed fungi, and roentgenograms of the lung revealed conditions more consistent with coccidioidomycosis than with tuberculosis. A skin test for Coccidioides immitis was positive. This case yielded to roentgen therapy after having failed to respond to sulfonamide drugs, penicillin, streptomycin and iodides. The authors stress the necessity of frequent roentgen examinations of persons who have been in areas endemic for coccidioidomycosis; in such persons cutaneous lesions, particularly those of a granulomatous nature, should be studied for the presence of the fungi. If coccidioidomycosis is kept in mind and histories of the possibility of exposure are taken, there should be no difficulty in separating these cases from tuberculous infections. The ring shadows are fairly

sharply defined, and there is no reaction around them. Metastatic cancer and bronchiogenic carcinoma may also be simulated, but the multiple lesions in the former and the absence of atelectatic areas in coccidioidomycosis should serve as differential features. Positive skin tests and serologic tests help to confirm the roentgenologic findings.

North Carolina Medical Journal, Winston-Salem

8:631-686 (Oct.) 1947

- Emotional Toll of Combat Experience. L. B. Hohman.—p. 631.
Therapy of Tetanus. Mary Margaret McLeod.—p. 634.
Extraction of Metallic Foreign Bodies from Food and Air Passages with Special Reference to Alnico Magnet and Triangulation Fluoroscopy. V. K. Hart.—p. 637.
Recent Advances in Treatment of Cardiovascular Disease. E. S. Orgain.—p. 641.
Apoplexy of Abdominal Wall. T. C. Bost.—p. 653.
Pre-Eclampsic Toxemia of Pregnancy. R. F. Zeigler Jr.—p. 655.
Causalgia: Its Etiology, Diagnosis and Treatment with Tetra-Ethyl Ammonium Chloride (Etamon Chloride). H. F. Forsyth, P. H. Dillard and R. A. Moore.—p. 659.

Ohio State Medical Journal, Columbus

43:1098-1208 (Nov.) 1947

- Hazard of Drug Hypersensitivity in Chemotherapy. T. L. Squier.—p. 1129.
Prophylaxis and Treatment of Tetanus. J. A. Prior and J. T. Read.—p. 1132.
*Rutin: Therapy for Capillary Abnormality in Hypertension. J. Q. Griffith Jr. and M. A. Lindauer.—p. 1136.
Abuses of Antibiotic Agents. M. A. Schnitker.—p. 1138.
*Mesenteric Thrombosis—Recovery Under Anticoagulant Therapy. E. D. Engleman.—p. 1141.
Common Foot Disorder First Manifesting Itself in Childhood. J. A. Goodman.—p. 1142.
Cardiac Disease in Industrial Practice. N. P. Frolkis.—p. 1144.
Modern Aspects of Diabetes. H. A. Gusman.—p. 1145.
Recto-Sigmoiditis, a Non-Specific Stenosing Entity. F. T. Gallagher.—p. 1148.
Complications of Pentothal Anesthesia and Their Treatment. D. E. Hale.—p. 1152.
Struma-Fibrosa: Giant Cell Variant. R. Hotz.—p. 1153.
Acute Degenerative, Exudative, and Proliferative Glomerulonephritis Superimposed on Chronic Diffuse Glomerulonephritis. J. W. Reagan.—p. 1155.

Rutin for Capillary Abnormality in Hypertension.—In a study of 265 hypertensive subjects, Griffith and Lindauer noted an increased incidence of apoplexy and retinal hemorrhage in those with increased capillary fragility. In 1,200 hypertensive subjects subsequently reported, it was found that 20 per cent manifested increased capillary fragility, while an additional 10 per cent had increased capillary permeability with normal fragility. A history of apoplexy and retinal hemorrhage was obtained in 9 per cent, each, of the group with increased capillary fragility and permeability, and in 2 per cent of the remainder. During the follow-up period, rutin was given and tests for capillary fragility became normal in 75 per cent of the patients whose tests had been initially abnormal. The initial dosage of rutin is 20 mg. by mouth three times a day. Tests for capillary fragility are repeated at regular intervals, and the dosage is increased whenever the results are abnormal. Capillary fragility and permeability, if originally increased, usually become normal after adequate dosage of rutin continued for a long enough time. It is probable that such change in the outcome of the test indicates a lessened likelihood of the development of apoplexy and retinal hemorrhage.

Anticoagulant Therapy in Mesenteric Thrombosis.—Engelman reports the history of a man aged 73, in whom a tentative diagnosis was made of mesenteric thrombosis or acute appendicitis. Exploratory laparotomy revealed a thrombus in the mesentery at the junction of the ileum and cecum. Because of the advanced age of the patient, an appendectomy and resection were not considered. It was considered that anticoagulant therapy might prevent further thrombosis and that recovery might ensue if the ileum was at all viable. Decompression was instituted by Wagensteen suction, and "dicumarol" 150 mg. was inserted in the tube. Concomitantly 100 mg. of heparin was given intravenously. The Wagensteen tube was replaced by a Miller-Abbott tube. All "dicumarol" was administered by the tube, and suction was shut off for three hours following administration. The patient recovered. The author believes that anticoagulant therapy played a major role in the recovery.

Physiological Reviews, Baltimore

27:511-664 (Oct.) 1947

- Body Size and Metabolic Rate. M. Kleiber.—p. 511.
Pharmacology of Antihistamine Compounds. E. R. Loew.—p. 542.
Metabolism of Acetic Acid in Animal Tissues. K. Bloch.—p. 574.
Biological and Medical Applications of Electrophoresis. J. A. Luetscher Jr.—p. 621.
Problems in Invertebrate Electrophysiology. T. H. Bullock.—p. 643.

Public Health Reports, Washington, D. C.

62:1499-1526 (Oct. 17) 1947

- Effect of Morphine Addiction on Blood, Plasma and "Extra-Cellular" Fluid Volumes in Man. H. Isbell.—p. 1499.
Electron Microscopy of Tooth Structure by Shadowed Collodion Replica Method. D. B. Scott and R. W. G. Wyckoff.—p. 1513.

62:1527-1554 (Oct. 24) 1947

- Statistical Activities in State Health Departments. D. D. Swinney.—p. 1527.
Sickness Absenteeism Among Male and Female Industrial Workers, 1937-1946, Inclusive. W. M. Gafafer.—p. 1538.

62:1555-1590 (Oct. 31) 1947

- Births, Infant Mortality and Maternal Mortality in United States—1944. Nancy J. Brombacher.—p. 1555.

Virginia Medical Monthly, Richmond

74:443-492 (Oct.) 1947

- Infectious Hepatitis. M. M. Pinckney, J. O. Burke Jr., W. T. Thompson and H. St.G. Tucker.—p. 443.
Care and Treatment of the Mentally Ill in Virginia—Past, Present, and Future. J. E. Barrett.—p. 448.
Scleroderma with Unusual Central Nervous System Manifestations. J. H. Guss.—p. 454.
Management of Cardiac Failure. J. M. Hutcheson.—p. 458.
Report of Case of Tumor of Ileo-Cecal Junction: Possibly Diverticulum. C. I. Sease.—p. 460.

74:493-542 (Nov.) 1947

- A Report. W. L. Powell.—p. 493.
Surgical Management of Unilateral Harelip. L. Smith.—p. 497.
Simple Adenoma of Breast. E. M. Baker.—p. 505.
Granulosa Cell Tumor of Ovary. W. Bickers, P. Sahyoun and A. Sandeh.—p. 509.
Schick, Dick and Tuberculin Testing in Rural Virginia School. H. H. Hanson.—p. 513.
Treatment of Acute Nephritis. K. Nelson.—p. 518.
Streptomycin in Tuberculosis. W. E. Royce.—p. 520.
Case of Progressive Bilateral Bullous Emphysema Complicated by Chest Trauma. H. A. Albertson and C. H. Peterson.—p. 522.
Reversal of Cardiac Hypertrophy by Excision of Popliteal Aneurysm. R. Antonice.—p. 525.

Wisconsin Medical Journal, Madison

46:1081-1183 (Nov.) 1947

- Syndrome of Nontropical Sprue with an Unusual Neurologic and Psychiatric Picture. F. Kant and H. N. Lubing.—p. 1095.
Report of Case of Paget's Disease in 18 Year Old Male, with Review of Literature. M. Wagner.—p. 1098.
Rh Factor in Pregnancy. W. E. Brown and J. J. Straub.—p. 1107.
Primary Streptococcal Peritonitis with Complicating Toxic Myocarditis and Pulmonary Emboli: Report of Case with Eventual Recovery. S. M. Evans.—p. 1112.
*Rural Accidents. R. L. MacCormack.—p. 1118.

Rural Accidents.—MacCormack analyzes 333 accidents that occurred in a rural community in the course of a year. Nearly three fourths of the accidents occurred in the afternoon. The highway accidents occurred chiefly at night. The author believes that physical and mental fatigue toward the end of the day and haste to get through with the day's work account in large measure for afternoon accidents. Farming is one of the most hazardous of occupations. Many times a farm worker comes close to being hurt. Only experience in timing his movements keeps him from injury. A lack of alertness from fatigue, undue haste or carelessness may bring disaster in the operation of varied farm implements. While a worker in industry may have to protect himself in operating only one stationary machine, a farmer operates a dozen or more different machines in various states of repair and propelled by either animal or motor power over smooth or rough terrain. The author stresses the need for a publicity campaign to reduce accidents. Analysis of the accidents suggested that 34 per cent were obviously preventable, or 23 per cent reasonably preventable and 43 per cent probably not preventable.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

59:327-366 (Oct.) 1947

Biochemistry of Skin: Review, with Particular Reference to Mucopolysaccharides. E. M. Watson and R. H. Pearce.—p. 327.

*Calciferol Treatment of Lupus Vulgaris. D. J. Macrae.—p. 333.

Absorptive Property of Various Ointments. J. Rae.—p. 338.

"Teverfew Dermatitis." A. K. Daniels.—p. 340.

Calciferol for Lupus Vulgaris.—The report by Macrae is based on 20 cases of lupus vulgaris, in which patients were sent for institutional treatment when other forms of treatment had failed. The average age of the patients was 38, and the average number of years they had had the disease was nineteen. The dose used was 150,000 units of calciferol per day by mouth or 600,000 units twice a week by injection. After the first two or three weeks of treatment the lupus patches looked more "angry" and swollen. After three weeks, improvement commenced but some of the worst cases did not show much change for five to six weeks, after which progress has been seen in every patient. When improvement began the lupus became flatter, and many of the patients mentioned how much softer the lesion felt. It has been possible to discharge 5 patients, 3 without evidence of lupus but 2 with a few nodules. All patients have shown some improvement. Disadvantages include the risk of toxic effects, hypervitaminosis and renal calculi. The author was struck with the amount of pigment occurring in many of the patients, which makes many of them still look unsightly. He now combines calciferol with local treatment using a combination of Kromayer and brass paste. So far, when that has been used, the soreness and breaking down of the lupus has not been nearly as marked, and the resultant ulcers healed more quickly.

British Journal of Ophthalmology, London

31:581-648 (Oct.) 1947

*Treatment of Traumatic Diplopia. J. C. Neely.—p. 581.

Treatment of Traumatic Diplopia.—During the war, the incidence of diplopia following injuries of the head and face has risen steeply, and a technic for the treatment of these cases has now been worked out. Between 1942 and 1944 more than 200 cases of diplopia due to injury were seen at routine examinations in two service hospitals. Diplopia is caused usually by a paresis and not a paralysis of an extraocular muscle. In the majority of cases, the closed head injury and not the penetrating head wound is the cause of diplopia. The vertically acting muscles are most often affected. In fractures involving the orbit, the orbital floor can be built up by means of a bone inlay if immediate restoration has not been effected. Well planned surgery of the eye muscle, aided by orthoptic exercises, is the best means of overcoming the residual diplopia and of restoring binocular single vision.

British Journal of Tuberculosis, London

41:1-74 (July) 1947

*Thoracic Neurofibroma. A. L. D'Abreu.—p. 5.

Tuberculin Test: Comparison of Patch Test and Mantoux Test in West African Natives. R. B. T. Baldwin.—p. 59.

Unusual Case of Actinomycosis of Lung and Thyroid. L. M. Shorvon and Ruth Pearson.—p. 64.

Hematogenously Disseminated Pulmonary Tuberculosis. R. Grenville-Mathers.—p. 68.

Scrotal Pneumocoele as Transient Complication of Artificial Pneumoperitoneum. W. N. Rogers and J. V. Garrett.—p. 70.

Thoracic Neurofibroma.—D'Abreu observed 8 neurofibromatous tumors in the course of a year and has removed 7. All were causing symptoms such as pain, tracheal compression, "asthma" and "pneumonia." The differential diagnosis from cysts, dermoids, chondroma, retrosternal goiter and such rare conditions as lipoma was usually not difficult, and the fact that all were causing symptoms made the decision to operate an easy one. The operative removal was easy because of the simple nature of the tumors and because all had a large solitary pedicle. This is not always the case in these tumors, the removal of

which may be highly difficult if malignant transformation has taken place. One tumor was not operated on because a metastasis to the neck was subjected to biopsy and seen to be cancerous. The author believes that many of these tumors are being discovered by mass radiography. He considers it highly advisable to operate on these, even if they are symptomless. The danger of their removal should be slight if malignant change has not occurred. It seems unwise to allow a high rate of transformation to cancer to develop.

British Journal of Urology, London

19:121-196 (Sept.) 1947

Severe Anemia and Hyperpiesia Associated with Prostatic Obstruction. H. Donovan.—p. 126.

Genital Tuberculosis. W. M. Northwick.—p. 132.

Some Experiences of Adrenal Surgery. W. S. Mack.—p. 172.

Anesthesia in Urologic Surgery. H. H. Pinkerton.—p. 175.

Lancet, London

2:567-602 (Oct. 18) 1947

*Cystic Disease of Breast: Human and Experimental. B. D. Pullinger.—p. 567.

Sycosis Barbae: Serologic Types of Staphylococcus Pyogenes in Nose and Skin and Results of Penicillin Treatment. B. C. Hobbs, H. L. Carruthers and J. Gough.—p. 572.

*Intensive Treatment of Kala-Azar with Sodium Antimonyl Tartrate. A. R. D. Adams and D. R. Seaton.—p. 575.

*Gaucher's Disease Without Splenomegaly. Margaret E. Morgans.—p. 576.

Dropsic Cot in Hospital. W. Napier.—p. 578.

Cystic Disease of Breast.—Pullinger believes that human and experimental cystic disease of the breast are comparable. Discrepancies exist in the interpretation of the manner in which the cysts develop. Both conditions are probably brought about by excess of estrogen acting on mammary epithelium that responds atypically. The decisive factor is not merely excess or imbalance of estrogen but the nature of the parenchyma. Cystic disease of the breast is an entity independent of mammary cancer. It does not predispose to mammary cancer of mice when the cancer is activated by the tumor agent.

Sodium Antimonyl Tartrate in Kala-Azar.—Adams and Seaton report on intensive administration of sodium antimonyl tartrate in Indian kala-azar. The preparation used was a sterile 2 per cent solution of sodium antimonyl tartrate. The total dosage for each patient was about 1 Gm. per 12 pounds (5.4 Kg.) of body weight in six intravenous injections given at intervals of three hours, usually at 9 a. m., noon and 3 p. m., on two successive days. The appropriate dose was made up to 15 or 20 cc. with isotonic sodium chloride solution and injected intravenously. Of the 6 patients treated, 1 did not respond and another required a second course of treatment. The other 4 were probably cured, but the possibility of a subsequent relapse cannot be entirely excluded. The results of intensive antimony treatment in these few cases do not compare favorably with those obtained with ethylstibamine ("neostibosan") or with "urea stibamine," a full course of either of which produces a cure rate of 90 to 95 per cent, or with the aromatic diamidines. The method can at present be recommended only when many patients have to be treated rapidly and the cost of treatment is an important consideration.

Gaucher's Disease Without Splenomegaly.—Morgans presents the histories of a father, his two sons and a daughter, all of whom had Gaucher's disease. The diagnosis was made by the detection of Gaucher cells in the bone marrow and by the presence of typical radiologic lesions in the bones. The family history suggests that in this series the disease was not only congenital and familial but also hereditary. All had led, or were leading, active lives, and in 1 case the diagnosis was first made at the age of 67 years. The unusual aspect of these cases of Gaucher's disease was that splenomegaly was absent.

Tubercle, London

28:201-222 (Oct.) 1947

Tuberculosis in Post-War Europe: An International Problem. Marc Daniels.—p. 201.

The "Quiescent" Case of Pulmonary Tuberculosis: Plea for More Rigid Standards. J. Cuthbert.—p. 211.

Ann. Medicinae Internae Fenniae, Helsinki**36:211-348 (No. 2) 1947. Partial Index**

- *Observations Made in Follow-Up Examinations of Poliomyelitis Patients. A. Arvola.—p. 211.
Relation of Thyroid Adenomata to Neurocirculatory and Gastric Dystonia. P. Brummer.—p. 232.
*Treatment of Infantile Atrophy with Desoxycorticosterone. P. Forssell.—p. 247.
Do Sulfonamides Possibly Have Any Effect on *Balantidium Coli*? M. Hirvonen.—p. 274.
Acute Infectious Lymphocytosis. E. Klemola and R. Hamarinen.—p. 285.
Immunization Against Scarlet Fever and Recurrent Cases 1937-1945. A. Ojala.—p. 308.
Changes in Cerebrospinal Fluid During Measles. A. Ojala.—p. 321.
Cushing's Syndrome in Child of Eight. H. Peitsara.—p. 332.

Follow-Up of Poliomyelitis Patients.—Arvola made follow-up studies on 117 patients who had had the paretic form of poliomyelitis between 1937 and 1942. He observed that at present the disease is as frequent in adults as it is in children and that children seem to have milder forms of the disease. The mortality in adults reached 32 per cent, while in children under 7 years of age it was zero. The mortality among males exceeded considerably that among females. There was a complete recovery in a sixth of the 90 patients with paretic poliomyelitis; in three fifths of the patients invalidism amounted to less than thirty per cent. Eighty-seven per cent of the patients over 18 years of age were self supporting. The tendency of the muscular pareses to recover was found to be the greater, the milder the pareses had originally been. Complete paralyses and the severest pareses improved little or not at all. In patients under 15 the degree of shortening of the paretic extremity was found to be related to the severity of the paresis at the beginning. In children serious pareses of extremities always resulted in a relative shortening of the limb, but mild pareses never involved shortening. Joint contracture and flaccid joints were the most frequent deformities in children, scoliosis of the spine in adults.

Desoxycorticosterone in Infantile Atrophy.—According to Forsell infantile atrophy (athrepsia or marasmus) is characterized by a gradual disturbance in the inner nutritional functions, leading to losses of the liquid and solid body substance. The entire subcutaneous fat tissue may disappear. In addition to disturbances of the water-binding and salt-binding functions, a protein-electrolyte disturbance of the blood has been found in marasmus. Some consider that an insufficiency of the suprarenal glands, occurring in connection with alimentary intoxication, combustion toxicosis and certain infectious diseases, contribute to the clinical picture of this pathologic state. The fact that Hislop and von Szász obtained favorable results from suprarenal cortex therapy and that infantile atrophy is a shock-like condition induced the author to try desoxycorticosterone in 4 cases of grave infantile atrophy. The treatment proved effective. Although this number of cases is too small to justify general conclusions, the author believes that it would be well to try cortical hormone in infantile atrophy. Desoxycorticosterone seems to reestablish the fluid-binding functions and to increase tolerance to food in the form of breast milk and calory-rich mixtures and thus to bring about a normal increase in the infant's growth.

Archivos Argentinos de Pediatría, Buenos Aires**18:3-72 (July) 1947. Partial Index**

- *Acute Leukosis in Children. E. G. Caselli.—p. 12.

18:73-144 (Aug.) 1947. Partial Index

- *Acute Leukosis in Children: Conclusion. E. G. Caselli.—p. 103.

Leukosis in Children.—Caselli observed 16 cases of acute leukosis in children during the period from 1935 to 1946. The majority of the patients were between the ages of 9 months and 6 years. The clinical symptoms were those of an acute infection, progressive anemia, hemorrhagic syndromes and painless enlargement of the liver, spleen and lymph nodes. Hematologic observation showed progressive, acute anemia with a scanty number of erythroblasts, changes in the number and form of leukocytes, granulocytopenia and in some cases lowered platelet determinations. Bone marrow studies in 8 cases showed granulocytopenia, in 7 lymphopenia and in 1 erythroblastosis.

Treatment consisted of repeated blood transfusions, proper diet and administration of vitamins B and C, iron, liver and alkaline preparations. The course in the fatal cases varied between sixteen days and two months.

Chirurg, Würzburg**17/18:97-144 (Dec.) 1946. Partial Index**

- *Trophic Nerves and Dupuytren's Contracture. P. Reichel.—p. 97.
*Duodenal and Ventricular Ulcer Due to Disturbance in Blood Perfusion. V. Hoffmann.—p. 100.
Successful Treatment of Osteodystrophia Fibrosa Generalisata (Engel-von Recklinghausen) by Removal of Parathyroid Tumor. Annelies Jentsch.—p. 103.
Fractionated Intravenous Drip Anesthesia: Question of Prolonged Anesthesia with Evipal. K. E. Loose and R. Knab.—p. 107.
Disk Prolapse and Hypertrophy of Ligamentum Flavum: Clinical and Medicolegal Aspects. A. Hart.—p. 113.

Trophic Nerves and Dupuytren's Contracture.—Reichel includes in the concept of trophic nerves not only the vasomotor nerves but all nerve fibers which, directly and without interference of circulation, control, the chemical processes that take place in the cells. He cites keratitis of the homolateral eye that often develops following excision of the gasserian ganglion as a typical example. That it is the sequel of the division not merely of the vasomotor nerves but of really trophic nerves is made highly probable by the fact that in some cases the primary involvement of the homolateral eye is followed secondarily by development of the same disorder in the other eye by way of Hagedorn's "trophic reflex." The author regards Dupuytren's contracture as a typical example of involvement of purely trophic nonvasomotor nerves. He denies that it is the result of cicatricial shrinkage and questions the supposition that it results from continued pressure on the hand in the course of hard physical labor, pointing out that bilateral occurrence seems to contradict this. A hereditary factor seems to play a part in some instances. In 1916 he called attention to the occurrence of Dupuytren's contracture following functional impairment in the region of the ulnar nerve. In a single year he encountered 4 cases of this type; in 3 cases the nerve had been injured, while the fourth case concerned a patient with tabes, in whom the ulnar region of the spinal cord was involved. Reichel cites the case of a man who had sustained a grenade injury at the inside of the right elbow with subsequent paralysis of the right ulnar nerve. The right hand showed claw formation, whereas the left hand showed Dupuytren's contracture. The author regards this concurrence of traumatic ulnar paralysis on the right side with the subsequent development of Dupuytren's contracture on the left side not as accidental but rather as exemplifying a trophic reflex. Causalgia after injury to nerves differs in certain respects from Dupuytren's contracture by the presence of vasomotor factors. Although there is no definite anatomic proof of the existence of purely trophic nerve fibers, it appears that Dupuytren's contracture is at least a trophoneurosis and presumably the result of involvement of the purely trophic fibers.

Impaired Blood Perfusion in Duodenal and Ventricular Ulcers.—Hoffmann reports microscopic studies on slight changes found in typical ulcer locations in the duodenal bulb. He found in resected specimens small areas of unevenness and retractions at the site opposite to a deep callous ulcer, that is, at the site of the "kissing ulcer." Surface defects were absent in these areas of retraction, but microscopic sections disclosed a degenerative process in the depth of the duodenal wall; the mucosa was generally intact or involved only in its lowest layers of Brunner's glands and the lymphatics. The surface layer of the mucosa was not perforated. The muscle layers were entirely or almost entirely destroyed. The lesion does not enter the tissue from the lumen and the mucosa but rather from the inner layers. The blood vessels are the starting point of this lesion, which is essentially an infarct in which the extent of vascular blockage determines the degree of tissue destruction. The process is an ulceration without an open ulcer, the latter being a complication. The acid or mechanical theories cannot explain this process. At any rate there are typical duodenal ulcers which develop from the inner layers of the duodenal wall into the mucosal layer, as an infarct. This deep ulcer can be interpreted as the result of a disturbance in the blood perfusion. Peptic digestion does not as yet play a part.

Book Notices

Practical X-Ray Treatment. By Arthur W. Erskine, M.D. Third edition. Fabrikoid. Price, \$1.50. Pp. 155, with 22 illustrations. The Bruce Publishing Co., 2612 University Ave., Saint Paul 4, 1947.

The pleasure of reading a book such as has been prepared by Dr. Arthur W. Erskine has been renewed with each of the three editions; the book may be regarded as essential for the library of every radiologist.

Eight chapters concern apparatus, measuring instruments, factors affecting skin dosage, factors affecting the depth-dose percentage, standard techniques, scattering and distribution, determination of the skin dose, effects of roentgen rays on tissue. Five chapters are on methods of treatment of malignant and noncancerous conditions.

From the wealth of the author's experience he has provided for a therapeutic radiologist an excellent discussion of the various factors concerned with roentgen treatment, the observation of which would lead to a considerable elevation of the standard of roentgen therapy throughout the country.

Train Your Hearing: Lessons for Home Practice. By Mary Wood Whitehurst. Cloth. Price, \$3. Pp. 80. The Volta Bureau, 1537 35th St., N. W., Washington 7, D. C., 1947.

A hearing aid does not always solve the problem of deafness. Persons with poor vision can tell immediately that they are seeing better, but the hard of hearing person needs patience to learn how to use the hearing aid to best advantage.

This book outlines a method of self training which is intended to "help re-educate one's residual hearing." Although self training is not as good as that obtained from skilled persons specializing in the field, some who are hard of hearing can be helped in this way. The author has described the experience of the armed services in their retraining of service personnel deafened while on duty.

This book suggests a system which will assist hard of hearing persons in auditory training by providing a list of words and phrases and instructions on their use. The author also suggests phonograph records (music and singing) to be used in auditory training. This volume is of particular interest to the otologist because he can recommend to his patients methods of developing dexterity in using the hearing aid.

Cardiopatologia: Elementi di semeiotica, diagnostica e terapia delle malattie cardiovascolari. Di A. Massimo Michelazzi, docente di patologia e di clinica medica incaricato di semeiotica medica nella Università di Pisa. Prefazione del Prof. Francesco Galdi. Fabrikoid. Price, 1500 lire. Pp. 469, with 85 illustrations. Rosenberg & Seller, Via Andrea Doria, 14, Turin 3, 1947.

The title of the book is misleading, as it deals mainly with the clinical signs, symptoms, and treatment of the diseases of the heart and of the peripheral blood vessels. The book is intended for the practitioner and the description of modern cardiologic methods of investigation is greatly simplified. The attempt is sound, but some of the physiologic views are far behind the times, as proved by the admission of a "tonus" of the heart and by the statement that adrenalin is the sympathetic mediator. Some clinical observations are not in agreement with general experience. Many chapters, as that on hypertension, in which the responsible factors are barely incompletely outlined, give the impression that the material was assembled somewhat hastily.

Your Community: Its Provision for Health, Education, Safety, and Welfare. By Joanna C. Colcord. Revised by Donald S. Howard, Director of the Department of Social Work Administration, Russell Sage Foundation. Third edition. Cloth. Price, \$1.50. Pp. 263. Russell Sage Foundation 130 E. 22nd St., New York 10, 1947.

"Your Community" was first published in 1939. It was revised in 1941 and again in 1947. Actually the manual is designed to assist persons or organizations in the study of community services and facilities. The manual tells how to study the health, education, safety and welfare status of any community, whether a township, borough, city or county. Although not intended as a guide to technically equipped surveyors making special social evaluations, it does give a wealth of background from which the interested citizen may organize his thoughts on community problems.

The Causation of Appendicitis. By A. Rendle Short, M.D., B.S., B.Sc., Professor of Surgery, University of Bristol, Bristol, England. Cloth. Price, \$2.50. Pp. 79, with 4 illustrations. William Wood & Co., Mt. Royal & Guilford Aves., Baltimore 2, 1946.

Dr. Short admits that a readily identifiable cause is not apparent in the great majority of patients with appendicitis. He suggests that diet may have much to do with establishing the disease, that when the intestinal contents lack cellulose they are too fluid and too readily enter the appendix where they dry and form fecoliths which eventually produce obstruction.

Such a bare outline does not do justice to the work that went into the preparation of this booklet or to the attractive manner in which its arguments are presented. How often did appendicitis occur in ancient times? In Elizabethan days did the two "honest and discrete matrons within every parish who shall be sworn truly to search the body of every such person as shall happen to dye within the same parish, to the end that they make true report to the clerke of the parish of all such as shall dye of the plague," know appendicitis? Did they record it on their death reports under such awe-inspiring names as "surfet," "plague in the guts" or "stoppage of the stomach?" What was the cause of King Stephen's death after he was suddenly seized with the "iliac passion" and with an old disease of the "emrods?" Why is it in the West Indies, or at the Johns Hopkins Hospital for that matter, that appendicitis is seen with relative infrequency in Negroes? Why is it that the Eskimos and the Chinese and the Orientals and the Arabians seem to have it but rarely? Why is it so common in the United States?

Dr. Short thinks that the incidence of appendicitis increases when races or people refine their dietetic habits and no longer use foods containing more than traces of cellulose. He defends his hypothesis adroitly. Anyone who enjoys a well written medical disputation will add this volume to his library with great pleasure.

Milk and Food Sanitation Practice. By H. S. Adams, B.Sc., Chief, Bureau of Environmental Hygiene, Division of Public Health, Minneapolis. Cloth. Price, \$3.25. Pp. 311, with 65 illustrations. The Commonwealth Fund, 41 E. 57th St., New York 22; Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, 1947.

The author outlines with descriptive tables and illustrations the duties and obligations of the control officer in the field of environmental sanitation. The text includes introduction of the health officer, public health engineer and food sanitarian to the problems of milk and food control. Need for effective educational programs is properly emphasized. Basic research in the essentials of restaurant and soda fountain sanitation are under way in many places at present. The author has done a timely job in bringing together factual data which can be supplemented as reports of current research become more widely available. The book is commended to every health officer and student of sanitation.

Professional Relationships of the Nurse. By Helen F. Hansen, R.N., M.A., Executive Secretary, Board of Nurse Examiners, Department of Professional and Vocational Standards, State of California. Second edition. Cloth. Price, \$3. Pp. 427. W. B. Saunders Company, West Washington Sq., Philadelphia 5, 1947.

Student nurses should become properly aware of their personal responsibilities and relationships to progress in their chosen field.

Considerable revision of the second edition of this book has been made. Primary changes relate to trends developed during World War II. The development of industrial nursing as a specialty field and the development of topics for study which will lead the student into a still broader understanding of her professional relationships are two of these.

Students are provided with an informative discussion of the organizations and services of the nursing profession at the local, district, state, national and international levels. They are also assisted in making a choice among fields of specialization in nursing.

The title, "Professional Relationships of the Nurse," is somewhat misleading, as it indicates that relationships of nurses with other professional personnel receive attention in addition to relationships among nurses. The weakness of the book lies in this lack of emphasis on the nurse as a member of the medical team.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EDEMA FOLLOWING SUNBURN

To the Editor:—I have seen 2 cases of disabling edema following modern sunburns. A man, aged 25, developed pitting edema of the lower extremities after only thirty minutes exposure to the sun. After about ten days he still has a 2 plus pitting edema, which has been gradually receding. A woman aged 24 developed pitting edema of all areas exposed to the sun but most severe in the lower extremities about twenty-four hours after a two hour exposure. The discomfort from the edema in the lower extremities has been severe enough to confine her to bed. At the end of the third day of illness there has been only slight improvement. Both patients received their exposure on the coast of North Carolina. The woman gives a history of hay fever, allergen unknown. Neither gives history of previous edema. Please advise as to the pathologic physiology involved and recommended treatment.

Lieutenant, M. C., Fort Bragg, N. C.

ANSWER.—Edema following sunburn is probably caused by histamine released from damaged basal cells of the epidermis. There are wide variations in individual sensitivity to ultraviolet. Blondes are more sensitive than brunets, people with hyperthyroidism or hypertension are more sensitive, menstruating and pregnant women are more sensitive. An acidic diet is said to increase sensitivity, and the sensitivity of individuals with congenital or acquired porphyria is well known.

Thus it is possible in a very sensitive person to have minimal burning with considerable systemic reaction.

In addition to purely symptomatic treatment and general measures ordinarily employed for the edematous conditions, the use of one of the antihistamine preparations such as "benadryl" or "pyribenzamine" might be of benefit. Aside from these there are no specific therapeutic measures for this type of edema.

TRANSIENT VARICOSITIES

To the Editor:—For the past two years a man aged 43 has had veins enlarge on the left side of the tongue and then return to normal. At this time it is painful for two or three days. The history is negative except that appendectomy was performed three years ago. The veins that enlarge are nearly on a level with the lower part of the teeth. The teeth are not bad and the tonsils are normal. The patient's health is very good. Can you help me as to cause and treatment?

George C. Stimpson, M.D., Poy Sippi, Wis.

ANSWER.—The lesion fits the description of transient varicosities. They may be unilateral, recurring and subsiding, and produce a "direct objective pain" over a period of two years. The cause is usually a direct irritation of the area by smoking, food, drink or drugs. Smoking may especially tend to produce such an effect. Repair of the teeth at a time near the onset of the symptoms would lead one to suspect an electrical irritation from amalgams of different composition. A remote cause might be an obstruction or abnormality of innervation of the vessels; the cervical area should be carefully examined for such a possibility. Treatment should consist in finding and removing the cause. A dilute astringent mouth wash may allay the symptoms.

AIRSICKNESS AND EARACHE

To the Editor:—Please forward information on precautionary measures against airsickness and earache in long flights involving four or five days in the air with occasional landings.

S. C. Lynn, M.D., Savannah, Ga.

ANSWER.—To avoid ear discomfort due to inadequate eustachian tube ventilation, avoid flying during a common head cold or an active allergic rhinitis. When the ears feel full during ascent or descent, swallowing a few times ordinarily relieves this feeling. If stiffness is not relieved, chewing gum and attempting to yawn may succeed in opening the tubes. The upright position with the head slightly extended on the neck favors opening of the tubes. If this is unsuccessful, close both nostrils and puff out the cheeks. The increased pressure may force the tubes to open. If trouble is anticipated, either a "benzedrine" or a "uamine" inhaler may be used to constrict the nasal and nasopharyngeal mucosa about twenty minutes before descent. Opening of the tubes either by swallowing or by autoinflation is thereby facilitated. On some of the planes the

stewardess is prepared to furnish a small balloon with a nasal tip for this purpose. The balloon is inflated with one nostril while the other is held closed. If simple inflation of the balloon doesn't open the tubes, the swallowing act is then carried out, the inflated balloon still being connected to the nose. This allows the increased air pressure in the balloon to act at the eustachian tube orifice at the moment when the muscles which tend to open the tube are in contraction. The latter device can be easily constructed by tying a small toy balloon onto a glass nasal tip.

Air sickness can sometimes be prevented by atropine-like drugs taken an hour or two before the plane trip. One mg. of atropine or 1 mg. of hyoscyamine taken by mouth has been found to be of value. A combination of such a drug with a barbiturate is claimed to be a little more effective.

EXCRETION OF ESTROGENS DURING PREGNANCY

To the Editor:—Please give me the amounts in rat units, international units or milligrams of estrogen, progesterone and chorionic gonadotropin during pregnancy by the month if possible.

M.D., Texas.

ANSWER.—In the early phase of pregnancy the excretion of estrogens rises slowly from normal values found in the menstruating woman, so that at about the eighth week there is from 2,000 to 10,000 international units of total estrogens. The values then increase gradually to from 15,000 to 40,000 or even more international units at term. Immediately before delivery estrogens decrease precipitously to very low levels. It should be understood that these estrogens are in the free and combined form, predominantly the latter, which can be tested biologically only after hydrolysis to the free or active form. Pregnanediol excretion is at a relatively low value up to about the third month, ranging from 5 to 25 mg. daily. There is a rather steep rise in daily excretion to about 100 to 150 mg. during the last few months of gestation, and a steep drop a few days before term to low values approaching those of the normal luteal phase (4 to 15 mg.). Chorionic gonadotropin excretion differs in pattern from the foregoing two substances. The hormone appears fairly promptly in the urine in increased quantities, so that it can be detected two weeks after the missed period by the injection of urine into rabbits (Friedman test). These values range between 1,000 and 5,000 rat units daily. By the thirtieth day, however, there is a definite explosion in excretion, approaching 100,000 rat units in twenty-four hours, and on about the fortieth to the sixtieth day there may be even a higher concentration up to 800,000 rat units daily. Following this sharp peak in excretion there is a gradual decrease to a fairly constant level of 5,000 to 10,000 rat units daily until term, when a further drop to an inappreciable amount occurs.

TWO VARIETIES OF HYPOGLYCEMIA

To the Editor:—Is there anything new in the treatment of idiopathic hypoglycemia? My patient is only fairly well controlled by frequent carbohydrate ingestion and often requires intravenous glucose. He is 42 years old, and his glucose tolerance curve is very low. Has partial pancreatectomy been attempted?

Lawrence R. Medoff, M.D., Grayville, Ill.

ANSWER.—There are two distinct varieties of hypoglycemia. One is caused by organic disease, such as islet cell tumor, insufficiency of the adrenal cortex, pituitary insufficiency or advanced hepatic insufficiency. In organic hypoglycemia the symptoms almost invariably are precipitated by fasting or exercise, are accompanied by a pronounced reduction of the value for blood sugar (usually to 50 mg. per hundred cubic centimeters of blood or less) and are relieved by the intravenous administration of dextrose. There should be a history of previous autonomic and emotional stability. If these criteria are satisfied and if hepatic and adrenal disturbances are eliminated, the patient should be advised to undergo surgical exploration of the pancreas. If a pancreatic tumor is not found, partial pancreatectomy could be done. The minority of islet cell tumors are found in the head of the pancreas. The possibility of diffuse islet cell hyperplasia is most remote; in most instances a tumor will be found if the search is careful enough. Resection of the rest of the pancreas may be necessary if symptoms persist. The possibility of malingering, involving the injection of insulin, should not be forgotten. Alloxan and radioactive zinc are being studied, but no conclusions have been reached concerning their effectiveness in treatment of islet cell tumors.

Second, there is the type of hyperglycemia associated with nervous tension and neurosis. Symptoms arising from this

variety are correlated with only a moderate lowering of the value for blood sugar. They usually occur two or three hours after meals. Such persons generally withstand the diagnostic fast of forty-eight to seventy-two hours without the development of pronounced hypoglycemia. To concentrate on their "obscure metabolic" disturbance is poor therapy since that attitude on the part of the physician serves to intensify an already existing anxiety. Surgical exploration is of no value to such patients. Reassurance and psychiatric therapy are of the greatest value. A diet relatively high in protein, with between-meal feedings as needed, often is of value. It should be explained to the patient that he has no organic illness and that the diet is secondary in importance to the solution of his emotional difficulties or to the acceptance of his unfortunate constitutional or biologic condition.

David has written concerning partial pancreatectomy in hypoglycemia. Whipple's paper should be consulted by any one concerned with this problem. Whipple believes the glucose tolerance curve is of little help in the differential diagnosis of hypoglycemia.

CONTROL OF ASCITES IN CIRRHOSIS OF LIVER

To the Editor:—I have a patient who has cirrhosis of the liver and whom I have had to tap three times in the past two months. At each tapping a large amount of yellow watery fluid was obtained. The laboratory analysis did not show anything abnormal. I have been considering several procedures that would make it unnecessary to do frequent paracenteses. I understand that there is supposed to be a glass button to be embedded subcutaneously to help the tissues absorb this ascitic fluid. There is also the operation of omentopexy, which helps absorption of the fluid by collateral circulation. Also I have been advised that sometimes removal of the spleen helps in these cases. I would appreciate some information on this matter. The patient's condition has improved considerably since he has had these paracenteses.

M.D., Missouri.

ANSWER.—It is difficult to avoid performing paracentesis frequently on patients who have the ascitic or "decompensated" form of cirrhosis, since no entirely satisfactory surgical method of control has been devised. Omentopexy has been largely discarded, general experience indicating that it carries a high risk and accomplishes little. In 42 per cent of the 38 cases described recently by Cates, in which omentopexy was done for the relief of ascites, death occurred within two weeks after the operation (Cates, H. B.: Surgical Treatment for Cirrhosis, *Arch. Int. Med.* 71:183 [Feb.] 1943). Other procedures calculated to drain ascitic fluid into peripheral veins (Ruotte) or the renal pelvis (Ferguson) have not been generally accepted. Crosby and Cooney (*New England J. Med.* 235:581 [Oct. 17] 1946) have revived interest in an old procedure, that of inserting a hollow glass button within the lower part of the sheath of the rectus muscle and by this means connecting the peritoneal cavity and the subcutaneous tissues. This allows for a sort of hypodermoclysis of ascitic fluid into the patient's tissues and has the merit of saving protein which would otherwise be lost. This method of approach deserves further trial.

A more radical approach to the problem of ascites has been suggested by the work done recently at Whipple's clinic in which portocaval anastomosis has been performed by uniting either the portal vein to the vena cava (Eck fistula) or the splenic and renal veins. Designed primarily to relieve portal hypertension, this operation also relieved ascites in some of the cases described by Blakemore and Lord.

In the main, most clinics which have to deal with numbers of patients who have ascitic cirrhosis have preferred to control ascites by occasional tapping and have placed their principal reliance in medical measures designed to improve hepatic function. These include dietary and vitamin therapy and such accessory measures as the administration of choline, methionine, protein hydrolysates, liver extract given intravenously and human serum albumin. These measures have been outlined in recent issues of THE JOURNAL (April 19, 1947, page 1181; June 21, 1947, page 673). Until these have received an adequate trial, the surgical measures mentioned could best be deferred.

SICK PETS

To the Editor:—As the family doctor I have been called on to put injured and sick pets, such as cats and dogs, out of their misery. On one occasion I used 2 grains of morphine and that took too long. After that I got some potassium cyanide, which caused convulsions and took about five minutes. To keep face with the next family I should like something prompt and painless. Please advise.

M.D., California.

ANSWER.—The following is recommended by a well known veterinary authority: 259.2 Gm. of pentobarbital sodium, 200 cc. of 95 per cent alcohol and sufficient isotonic solution of sodium chloride to make 2,000 cc. One cc. to 5 pounds weight.

MEMORY DEFECT FOLLOWING SHOCK TREATMENTS

To the Editor:—A man aged 38 became very nervous and agitated in January 1946. During the war years he was extremely overworked. Previously this patient was always congenial and emotionally stable. He was far above average intelligence and had a keen memory. He held a very responsible position and was a leader in the community. He was advised to consult a psychiatrist, who suggested electroshock therapy. He was given between fifteen and twenty electroshock treatments, which seemed to improve his agitation. While at the sanatorium he had difficulty in sleeping and was given 12 grains (0.78 Gm.) of sodium amylal nightly for sleep. On returning home he took 6 grains (0.4 Gm.) of secobarbital each night for sleep. This sedation did not improve his sleeping and he discontinued using it. For the past year his family advises me that he has been sleeping from two to three hours a night. After the patient left the sanatorium he returned to work but because of partial loss of memory he became emotionally upset and lost confidence in himself. He was told that as a result of the shock therapy his memory would be temporarily affected but that it would return to normal. The patient was eventually forced to quit work. He has had no further electroshock therapy but he still has a partial memory defect. Some events and names he cannot recall. "During all this period the patient has been very rational throughout. I am anxious to help him. Is it possible that his memory will still return to normal? Has the patient received too much electroshock therapy? Could these symptoms be due to disturbances of the male climacteric? The patient is in good physical condition. Could you suggest anything in the way of treatment? His memory of events since his shock treatment is normal. He still is emotionally upset.

M.D., Washington.

ANSWER.—Ordinarily the memory defect produced by fifteen or twenty electroshock treatments is circumscribed and ceases to be noticeable after thirty to sixty days following treatment. Barbiturate drugs may produce a circumscribed memory defect also. If the mental symptoms continue after treatment—and it must be remembered that electroshock treatment is not always successful—the patient may worry excessively about the memory defect and magnify its importance. He may do this also as a defense against having further treatments or against returning to work with which he feels unable to cope while ill. In other words, a patient with a depression (melancholy, ideas of inefficiency, slowed mental processes, difficulty in reaching decisions, difficulty in concentration) may be sick much longer than one year and still recover. The amount of shock treatment does not seem to have been excessive. It is unlikely that he is passing through the male climacteric. As his memory for events since the shock treatment is normal, it is also unlikely that the trouble is caused by any progressive organic brain disease. Sometimes amphetamine sulfate 5 to 10 mg. twice each morning helps recovery of memory for recent events and serves as a stimulant emotionally.

HOUSE DUST ALLERGEN

To the Editor:—Is "autogenous" house dust superior to stock commercial house dust desensitizing preparations?

Victor H. Boogdanian, M.D., New Brunswick, N. J.

ANSWER.—The nature of the house dust allergen has not been satisfactorily established. Most investigators agree that house dust consists of a combination of many of the common environmental substances found in a home together with incidental organic materials. Some believe there is in addition a specific factor in house dust which is not related to any of the known environmental materials causing allergy. This specific factor has not been identified, although house dust has been used for about twenty-five years in the treatment of respiratory allergy.

Generally a stock dust preparation made by obtaining house dust from a number of homes, preferably of patients with respiratory allergy, is satisfactory in the majority of cases of sensitivity to house dust. One must make certain that the preparation does not act as a primary irritant but is definitely allergenic. There are occasional patients in whom a preparation made from the dust of the individual's own home ("autogenous") gives better reactions than the stock dust preparation. This may be due to a relatively excessive amount of one or more of the allergens in the preparation to which the patient is selectively more sensitive; i. e., if a patient is more sensitive to feathers and kapok than the average person and his environment contains an excessive amount of feather dust his "autogenous" dust preparation may be a more effective material than the stock solution. It is therefore a good rule that if a patient who has symptoms that are suggestive of house dust sensitivity (increased symptoms while at home, especially during the winter months) has a slight skin reaction to the stock house dust preparation, a solution made from the dust of the patient's own home is justified. The routine preparation of "autogenous" solutions in every suspected house dust case is neither advantageous nor necessary.

WOMEN WHO CONTINUE TO BLEED POST PARTUM

To the Editor:—I have had an obstetric patient who "spotted" daily for as long as ten weeks after delivery. She delivered an 8 pound 7 ounce (3,827 Gm.) boy spontaneously, with a second degree perineal tear resulting. The placenta was expelled spontaneously without undue traction and appeared to be intact on inspection. The cervix was not inspected. The duration of labor was within normal limits. About one-half hour after delivery the patient had a "heavy flow," which was controlled by a second ampule of ergonovine, the first having been given at the completion of the third stage. When the patient was discharged the tenth day after delivery the uterus was still palpable 1 to 2 fingerbreadths above the symphysis. The bleeding stopped for two to three days, but after resumption of activity the patient would soil one pad a day. At the sixth week post partum, the cervix was baggy and showed several lacerations. The fundus was not unduly enlarged but was in a position of second degree retroversion. The cervix was treated once a week with an application of silver nitrate. Blood count at the end of seven weeks showed hemoglobin 1.5 and erythrocytes 3,750,000. I should like to ask the following questions: Is it common practice to permit these patients to spot until one or even two menstrual periods have occurred? Provided the patient does not have a sudden severe flow, when, in your opinion, is the proper time for dilation and curettage or cervical cauterization? Should a patient with subinvolution be discharged from the hospital? Should she be discharged as long as she has any bleeding? Please include any forms of local therapy you have found to be beneficial.

M.D., Pennsylvania.

ANSWER.—Women who continue to bleed or spot after having had the first postpartum menstrual flow should be curetted. Cervical cauterization should not be performed until after four months from the time of delivery except when the cervix is the source of bleeding. First, silver nitrate or other medicament should be tried to control the bleeding and if this is not successful the electric cautery should be used. Caution must be exercised in the use of a cautery early post partum because pelvic infection has followed such a procedure. A patient with subinvolution may be permitted to leave the hospital provided she is not bleeding, but she should be told to take fluidextract of ergot or an ergonovine tablet four times a day for four or five days. If the subinvolution is associated with the escape of bright colored blood or an unusual amount of dark blood, the patient should be kept in the hospital resting in bed and taking ergot or ergonovine. If the bleeding is profuse in the first few days post partum and is not controlled by bed rest and medication, a curettement should be done.

CARDIAC FAILURE IN CHILDREN

To the Editor:—There has been a great deal of controversy concerning digitalization of rheumatic cardiac patients in failure. I would appreciate a complete outline dealing with therapy for the rheumatic cardiac patient in failure. I refer to pediatric cases. Will you include rapid and slow methods of digitalization? Harry W. Orris, M.D., Brooklyn.

ANSWER.—Heart failure due to rheumatic fever in childhood practically always results from active rheumatic infection involving the myocardium. On this account the management of cardiac failure in childhood differs from that in the adult. Digitalis should rarely be the first weapon employed. Complete rest in bed, sedation, oxygen and the use of diuretics may be sufficient to relieve the patient's symptoms.

In instances of acute rheumatic pericarditis, digitalis seems to be almost useless. In the more chronic cases, in which slowly progressive congestive heart failure occurs, digitalis often proves to be of great value.

The amount of digitalis necessary to secure digitalization is roughly $1\frac{1}{2}$ grains (0.1 Gm.) for each 10 pounds (4.5 Kg.) of body weight. Although rapid digitalization is seldom necessary, it may be achieved by administering half of the required dose initially and then one fourth of the remainder at six hour intervals, thus completing the total dosage in twenty-four hours. Except in an emergency, the required amount should be spread over a period of two or three days. The daily maintenance dose is about one fifteenth of that required to secure digitalization. The oral route is usually satisfactory. If vomiting is present, digitofoline or a similar preparation can be used intramuscularly or intravenously.

Children show wide variations in their tolerance to digitalis. They may show toxic symptoms from amounts computed according to the outline suggested. More often they require doses larger than those given as standard for a given weight. In any event the child must be carefully watched during the entire time digitalis is being administered. Nausea, vomiting, extrasystoles, dropped beats or excessive slowing of the heart point toward overdosage. Frequent electrocardiograms aid in showing early digitalis intoxication. When signs of poisoning occur, the drug should be withdrawn for a few days, and smaller doses employed thereafter.

In auricular fibrillation, digitalis is highly beneficial. This condition is infrequent in children and occurs chiefly in children with extreme myocardial damage. Though great temporary benefit may result, the very presence of auricular fibrillation portends a fatal termination in a matter of months or at most within a few years.

NO BASIS FOR USE OF DESICCATED KIDNEY SUBSTANCE

To the Editor:—Please discuss the use of desiccated kidney substance in the treatment of kidney diseases. M.D., Puerto Rico.

ANSWER.—There is no basis, in the present state of our knowledge, for the use of desiccated kidney substance in the treatment of kidney diseases. The experimental trial of various extracts of the kidney in the past has been done in the hope of improving renal excretory function or as a means of lowering the blood pressure in hypertensive disease. The evidence for the former action has been entirely unsatisfactory if one eliminates effects due to the various vasodilator components of many tissue extracts. The antipressor effect of kidney extracts orally administered is difficult, if not impossible, to demonstrate in man, although there is evidence for effectiveness in the hypertensive rat.

It will probably be a long time before dried kidney achieves the results claimed for it by certain unscrupulous pharmaceutical dealers, one of whom used to advertise that his brand contained both the internal and external secretions of the kidney.

UNABSORBED BISMUTH SALTS

To the Editor:—Eight years ago a patient came under my care suffering from secondary syphilis. Antisyphilitic therapy consisting of alternate courses of nearsphenamine and bismuth salicylate was given continuously for one and one-half years. The patient is in good health and is clinically and serologically free from evidence of syphilis. X-ray of the pelvis shows infiltrations of bismuth in the gluteal muscles. Is there any form of treatment that will cause absorption of this salt? Will it ever be absorbed if simply left alone? Stanley J. Simmons, M.D., Louisville, Ky.

ANSWER.—Bismuth salts injected intramuscularly usually are reasonably rapidly absorbed. However, their presence may be detected many years later by x-ray examination. In one case, for example, such shadows have been seen after more than seventeen years. The reason for this shadow, aside from the fact that it may be bismuth, could be that bismuth deposition has excited a focus of calcification, or, as is known to occur after injections of bismuth hydroxide, an insoluble bismuth soap may have formed. It is obvious that, short of excision of these injection sites, no treatment is of avail. Except for occasional embarrassment to the patient in whom bismuth shadows might be found when x-ray examinations are made in the region of the deposit, no real harm will result.

EFFECT OF ESTROGENS ON BLOOD PRESSURE

To the Editor:—Please discuss the effect of estrogens on hypertension, hypotension and normal blood pressure. M.D., Syracuse, N. Y.

ANSWER.—There appears to be little direct effect of estrogens on the blood pressure of human beings when administered in therapeutic doses. An indirect effect is obtained, however, in patients with hypertension in whom an increase in blood pressure results from nervous tension and emotional instability associated with menopausal symptoms. Relieving the patient of such symptoms by estrogens will often cause appreciable drops in the blood pressure to more normal levels. There may also be a correction of hypotension with the patient under therapy with similar substances, but to a less dramatic degree. Little if any effect is encountered on normal blood pressure however, except for the possibility that when the administration of estrogens is excessive it produces nervous tension similar to that encountered during the premenstrual phase of many women. This reaction is transitory and lasts for only a few days following the administration of the estrogen.

CLIMATE AND THE BLOOD COUNT

To the Editor:—The statement is often heard that a person's blood becomes "thicker" in a cold climate and "thin" in a warm climate. A patient of mine returning from the Dutch West Indies quotes physicians there as confirming this statement. Is there any difference, normally, in the hemoglobin and blood count of a person living in a cold or hot climate? S. Willard Haley, M.D., Houston, Texas.

ANSWER.—There are no reliable data which would indicate that characteristic changes occur in the blood counts of persons living in cold climates as compared with those living in hot climates.

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RECENT ADVANCES IN THE TREATMENT OF VIRAL AND RICKETTSIAL DISEASES

THOMAS M. RIVERS, M.D.
New York

Brilliant results obtained in the therapy of certain bacterial and spirochetal diseases by the use of chemical agents and antibiotics emphasize the absence of similar successes in the treatment of viral and rickettsial diseases. This difference between the response of bacterial and spirochetal diseases on the one hand and viral and rickettsial diseases on the other to chemotherapy is probably due to fundamental differences in the nature and metabolic activities of the two groups of disease-producing agents.

Although nothing similar to the therapeutic results obtained with bacterial and spirochetal diseases can be pointed to in the viral and rickettsial field, sufficient evidence has been obtained to warrant the hope that eventually chemotherapeutic agents and antibiotics will be found effective against maladies in the latter group. For instance, Meiklejohn and his associates¹ and Wiseman and his associates² have reported that penicillin and sulfadiazine have some therapeutic value when used against certain strains of viruses in the psittacosis-lymphogranuloma group. Greiff and Pinkerton³ have shown that experimental rickettsial infections are somewhat susceptible to the action of penicillin, while other workers⁴ have found them to be susceptible to para-aminobenzoic acid and nitroacridine. It has also been shown that nitroacridine has an inhibitory effect on the growth of influenza B virus in embryonated eggs.⁵

From the Hospital of the Rockefeller Institute for Medical Research. Read in a Panel Discussion on Recent Advances in Treatment before the joint meeting of the Section on Internal Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

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3. Greiff, D., and Pinkerton, H.: Inhibition of Growth of Typhus Rickettsiae in the Yolk Sac by Penicillin. *Proc. Soc. Exper. & Med.* 55: 116-119 (Feb.) 1944.

4. Snyder, J. C.; Maier, J., and Anderson, C. R.: Report to the Division of Medical Sciences, National Research Council, Washington, D. C., Dec. 26, 1942. Greiff, D.; Pinkerton, H., and Moragues, V.: Effect of Enzyme Inhibitors and Activators on the Multiplication of Typhus Rickettsiae. I. Penicillin, Para-Aminobenzoic Acid, Sodium Fluoride, and Vitamins of the B Group. *J. Exper. Med.* 80: 561-574 (Dec.) 1944. Hamilton, H. L.; Plotz, H., and Smadel, J. E.: Effect of *p*-Aminobenzoic Acid on the Growth of Typhus Rickettsiae in the Yolk Sac of the Infected Chick Embryo. *Proc. Soc. Exper. Biol. & Med.* 58: 255-262 (March) 1945. Hamilton, H. L.: Effect of *p*-Aminobenzoic Acid on Growth of Rickettsiae and Elementary Bodies, with Observations on Mode of Action. *ibid.* 59: 220-226 (June) 1945.

5. Green, R. H.; Rasmussen, A. F., Jr., and Smadel, J. E.: Chemoprophylaxis of Experimental Influenza Infections in Eggs. *Pub. Health Rep.* 61: 1401-1403 (Sept. 27) 1946.

Fitzgerald and Lee⁶ found that "phosphine GRN" (2-amino-9 [*p*-aminophenyl] acridinium chloride) effectively inhibits the multiplication of a bacteriophage in infected suspensions of *Escherichia coli*. This inhibition is counteracted by ribonucleic acid, a result which suggests that some cellular mechanism involving nucleic acid or related substances is essential for the multiplication of the bacteriophage. According to Cohen and Anderson,⁷ 5-methyl tryptophane inhibits multiplication of *E. coli* B without apparent effect on the rate of its oxygen utilization in a synthetic medium. *E. coli* organisms infected with bacteriophage T2 or T4 do not support the reproduction of the viruses while in the presence of 5-methyl tryptophane, a substance which has no deleterious effect on the bacteriophages exposed to it in the absence of bacteria. While bacteriophages do not multiply in bacteria in the presence of 5-methyl tryptophane, they are able to do so when it is removed from the bacteria by dilution. Horsfall and McCarty⁸ have shown that several polysaccharides, such as those obtained from *Klebsiella pneumoniae* and *Streptococcus MG*, have a therapeutic action in mice suffering from pneumonia caused by a virus designated as PVM (pneumonia virus of mice). This pneumonia can be produced only by intranasal introduction of the virus, and the polysaccharide, if a therapeutic effect is desired, also must be introduced intranasally. The maximum multiplication of the virus in the lungs is reached on the sixth or seventh day, at which time most mice die. Polysaccharides introduced as late as the fourth day after infection will protect the animals from death. While the virus is not inactivated by the polysaccharides, it is unable to multiply in their presence. Takahashi⁹ has reported that a polysaccharide from yeast inactivates tobacco mosaic virus and believes that the inactivation is brought about through a reaction between the polysaccharide and some group in the virus particle which is essential for its infectivity. Other workers, however, are of the opinion that the yeast polysaccharide produces the observed results by action on the host cells instead of on the virus. Snyder¹⁰ has emphasized the fact that para-aminobenzoic acid used in experimental rickettsial infections in embryonated eggs does not destroy or kill the

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8. Horsfall, F. L., Jr., and McCarty, M.: The Modifying Effects of Certain Substances of Bacterial Origin on the Course of Infection with Pneumonia Virus of Mice (PVM). *J. Exper. Med.* 85: 623-646 (June) 1947.

9. Takahashi, W. N.: Properties of a Virus Inactivator from Yeast. *Science* 104: 377 (Oct. 18) 1946.

10. Snyder, J. C.: Personal communication to the author.

rickettsias already present; it merely inhibits further multiplication of them.

Sufficient examples have been cited to show that progress has been made in the treatment of experimental viral and rickettsial diseases by means of chemical agents and antibiotics. There is also evidence that penicillin and sulfonamide compounds are efficacious in the treatment of human diseases caused by viruses in the psittacosis-lymphogranuloma group and that para-aminobenzoic acid given in sufficient amounts and often enough has value in the treatment of human diseases caused by rickettsias, namely, epidemic typhus, murine typhus, scrub typhus and Rocky Mountain spotted fever.¹¹ However, according to Snyder,¹⁰ para-aminobenzoic acid is of value only when it is given early in the course of illness, because within a week sufficient damage to the vascular system of the human body has usually been accomplished by rickettsias to cause death of a patient even though no further multiplication of them takes place.

At this point it should be emphasized that, with the exception of diseases in the psittacosis-lymphogranuloma and the typhus-Rocky Mountain spotted fever groups, viral and rickettsial maladies of human beings do not respond to known chemotherapeutic agents and antibiotics. Therefore, indiscriminate use of these substances in the treatment of such diseases of man is inexcusable. In view of what has been accomplished, there is reason to believe that potent therapeutic agents for many of these diseases will be discovered. In the meantime, however, practicing physicians should be aware of the limitations of this kind of therapy with the agents already at hand. Diagnosis and treatment of infectious diseases should be based on clinical skill and laboratory precision instead of chemotherapeutic and antibiotic trial and error.

A striking feature about the results of work on chemotherapy of experimental viral and rickettsial diseases is that the viruses and rickettsias themselves are not inactivated or injured by the substances used; all that happens is that further multiplication of the disease-producing agents ceases. This is quite different from what takes place when bacteria and spirochetes come in contact with chemotherapeutic agents and antibiotics. In most instances, these micro-organisms are killed by adequate concentrations of the therapeutic substances, and their death is believed to be brought about by an interference with certain of their enzyme systems or metabolic processes. Most bacteria and spirochetes, possessing all the enzyme systems essential for growth and reproduction, are not dependent on host cells. On the other hand, viruses and rickettsias are intracellular parasites and are believed not to possess complete enzyme systems essential for multiplication. If this is true, then such systems are supplied wholly or in part by their host cells. Furthermore, if viruses and rickettsias do not have enzyme systems of their own, then therapeutic agents can have no direct, deleterious effect on them through disruption of such systems; nevertheless, their activities and multiplication can be interfered with indirectly through the action of therapeutic agents which disturb certain enzyme systems and metabolic processes of their host cells. What has just been said offers a logical explanation of why known chemotherapeutic agents and antibiotics yield

different results in different kinds of infectious diseases and indicates a practicable approach to therapeutic problems in the viral and rickettsial field.

ABSTRACT OF DISCUSSION

HEPATITIS FOLLOWING TRANSFUSIONS

QUESTION: Is there any method of preventing hepatitis following transfusions from blood or plasma?

ANSWER: As yet there is no definite means of preventing this kind of hepatitis. Dr. Joseph Stokes Jr. and his associates are conducting experiments with human globulin given at least twice at monthly intervals after the administration of blood or plasma. The evidence that globulin given in this manner is efficacious is not as yet conclusive.

NO PREVENTIVE OF THE COMMON COLD

QUESTION: Is there any hope of developing methods to prevent the common cold?

ANSWER: There are no methods at present of preventing the common cold. Of course, persons working in the field of medical research hope some day to find a means of preventing this disease.

POLIOMYELITIS

QUESTION: What can be done to prevent poliomyelitis?

ANSWER: At present no method is known by which this disease can be prevented. Vaccines are not available for use in human beings. There is doubt whether prophylaxis by means of convalescent serum is practicable. The virus is widespread during epidemic periods, being found in great quantities in the feces of patients with paralysis, patients with abortive poliomyelitis, persons with inapparent infection with poliomyelitis and many contacts. The virus is also found at times in the secretions of the upper respiratory tract. Many workers believe that the disease is spread by contact, the virus getting from feces and secretions of the upper respiratory tract of patients, etc., to the mouths of susceptible persons. If what has been said is true, it will be difficult to put into effect measures of control.

TREATMENT OF VIRAL DISEASES

QUESTION (Dr. J. Greengard, Chicago): Do human convalescent serums have an important place in the therapy of viral diseases?

ANSWER: No. By the time that a patient becomes ill of a viral infection most of the cells of that patient which are going to be infected have already become infected by the virus producing the illness. Since antibodies do not get into cells the administration of convalescent serums at this time as a rule cannot do a great deal of good.

ANTIBIOTICS AND THE COMMON COLD

QUESTION (Dr. H. Morrison, Boston): Is it worth while giving antibiotics in the common cold or influenza?

ANSWER: No.

RICKETTSIAL DISEASE

QUESTION: What is the mechanism of para-aminobenzoic acid in rickettsial disease?

ANSWER: The mechanism of the action of this drug in rickettsial diseases is not known. It is considered to influence the host cell in some manner so that the rickettsias cannot multiply. In any event, the action does not seem to be against the rickettsias themselves.

NUTRITIONAL CONTROL OF VIRAL DISEASES

QUESTION: Is it feasible to attack viral disease by nutritional control or does it take too long to bring about such influences?

ANSWER: To influence the course of most viral diseases by means of ordinary nutritional control would take too long to be of practicable value. On the other hand, it might be feasible to alter some special enzymatic or metabolic process of host cells sufficiently rapidly to influence favorably the outcome of certain viral and rickettsial diseases. Several investigators are working in this direction.

11. (a) Ravenel, S. F.: Para-Aminobenzoic Acid Therapy of Rocky Mountain Spotted Fever. *J. A. M. A.* 133: 989-994 (April 15) 1947.
(b) Smith, P. K.: The Use of Para-Aminobenzoic Acid in Endemic (Murine) Typhus, *ibid.* 131: 1114-1117 (Aug. 3) 1946.

RECENT ADVANCES IN TREATMENT IN
FIELD OF GASTROENTEROLOGYH. L. BOCKUS, M.D.
Philadelphia

In the allotted time it is not possible to review all the recent therapeutic advances in the field of gastroenterology. I shall confine my remarks to those topics which have attracted most attention in both medical and lay literature. Perhaps in the question and answer period time may be afforded for discussion of other topics.

PSYCHOSOMATIC ASPECTS

A large number of patients presenting themselves to the internist and to the general practitioner for relief of gastrointestinal complaints have no recognizable organic disease in the alimentary tract or elsewhere. Furthermore, although proof is lacking to support the psychogenic origin of common gastrointestinal disorders like peptic ulcer, regional enteritis and ulcerative colitis, a careful psychologic survey on many of these patients is highly suggestive of the presence of an important psychogenic component in their illness. Weiss¹ stated, "Psychosomatic disturbances of gastrointestinal function occur in healthy people subjected to unusual emotional stress and disturbances of gastrointestinal function are among the commonest manifestations of emotional stress in neurotic people." I believe that these statements can be accepted in full and that, among some of the older physicians trained only along organic lines, too little attention is devoted to an appraisal of emotional factors in gastrointestinal disorders. The statement was made by Alvarez,² "Every gastro-enterologist who hopes to be worthy of his name and would like to cease making one serious blunder after another should be learning all he can about the psychiatry of the apparently sane. Like me, he may not have wanted to get into this field of medicine but he cannot stay out of it and be a safe internist." It is hoped that the next generation of internists will be sufficiently trained in psychiatry to appreciate the importance of psychic components in illness and that the well trained psychiatrist will continue to insist on the elimination of organic disease before concluding that the psyche is all important. This situation will exist only when the preliminary training of the psychiatrist includes training in internal medicine and when the internist by training has become something of a psychiatrist. Certainly the gastrointestinal internist to be a successful therapist must appreciate the significance of emotional factors and the part such factors play not only in functional but in organic disorders as well.

CARCINOMAS OF ESOPHAGUS AND CARDIAC
END OF STOMACH

Approximately 2,000 persons die in the United States every year of carcinoma of the esophagus.³ In 35 to 50 per cent of cases, the lesion is located in the lower

end of the esophagus.⁴ There is some statistical evidence to suggest that distant metastasis is absent in 25 to 40 per cent of patients who succumb as a result of carcinoma of the lower portion of the esophagus.

Approximately 10 per cent of carcinomas of the stomach occur in the cardiac end.⁴ Many neoplastic lesions in this region eventually extend into the lower part of the esophagus. Until recently patients with carcinoma of the lower part of the esophagus and of the cardiac end of the stomach have been regarded as having an almost hopeless prognosis, and in most instances operation was not attempted. As a result of advances in thoracic surgery and in anesthesia, together with the widespread use of chemotherapeutic agents, resection and immediate restoration of continuity have become a possibility in many patients having lower esophageal and high gastric neoplasms. By means of the transthoracic approach a number of surgeons are now resecting the lower part of the esophagus or the lower part of the esophagus and the upper part of the stomach and reestablishing continuity by doing an esophagogastrostomy in the treatment of these lesions.⁵

An expertly trained surgeon is capable of exploring the lower part of the esophagus by the transthoracic approach with an insignificant mortality. Recently Clagett reported twenty-four explorations of this type in which the lesions were found to be inoperable without a single mortality. At the Graduate Hospital, Hawthorne⁶ has opened and closed the thorax for inoperable carcinoma of the lower part of the esophagus in 3 instances without a mortality. What is the anticipated mortality when the lesion is resected? The immediate postoperative mortality in Clagett's series of 27 cases of transthoracic resection of the cardia and lower portion of the esophagus was approximately 19 per cent. The mortality in the large group of patients operated on by Sweet is now somewhere between 12 and 15 per cent. Hawthorne⁶ at the Graduate Hospital attempted transthoracic esophagectomy (lower part of the esophagus) sixteen times within the past year and a half. In 3 instances the lesion was not resectable. Three of the 16 patients died in the immediate postoperative period; 3 other patients died within two to four months; 7 patients are living from three to fifteen months after operation. It now seems obvious that some patients with carcinoma of the lower part of the esophagus and of the cardiac end of the stomach may be cured by radical transthoracic resection. It is quite possible that the five year cure rate may be as high as or higher than that encountered in radical resection for carcinoma at the lower end of the stomach. The perfection of the technic of partial esophagogastrectomy by the transthoracic approach represents a definite advance in the treatment of carcinoma in this region. Obviously every large medical center should include in its personnel a surgeon who is expert in the performance of these operations.

AMINO ACIDS IN DIET OF PATIENT
WITH ULCER

In 1942 Levy and Siler⁷ demonstrated the buffering effect of a pancreatic enzymatic hydrolysate of casein on gastric acidity. The introduction of 30 Gm. of the

Read in a Panel Discussion on Recent Advances in Treatment before the joint meeting of the Section on Internal Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

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6. Hawthorne, H.: Personal communication to the author.

7. Levy, J. S., and Siler, K. A.: Clinical Studies of Amino Acids: Effects of Oral Administration of Solution of Amino Acids Mixture on Gastric Acidity, Am. J. Digest. Dis. 9: 354-356 (Oct.) 1942.

amino acid mixture into the stomach caused a disappearance of hydrochloric acid in the majority of normal subjects for thirty to forty minutes. These workers suggested that amino acid mixtures might prove of benefit in the management of peptic ulcer. Co Tui and his associates⁸ (1945) reported their experience with "hyperalimentation treatment" of peptic ulcer, employing feedings of protein hydrolysates and "dextri-maltose." They stressed the value of this method in healing active ulcers previously thought to be intractable. The efficiency of the method was attributed to the buffering action of the protein hydrolysate and the alleviation of a protein deficiency presumed to be present in many of their patients. These workers deserve credit for drawing the attention of the clinician to the value of high protein feedings in the management of the patient with ulcer who is undernourished. Unfortunately, in the lay press the method was described as a new cure for peptic ulcer, and many patients have been unnecessarily subjected to the ingestion of unpalatable mixtures of amino acids as a substitute for more orthodox and usually equally efficient ulcer regimens.

Briefly, the facts concerning the usefulness of an amino acid diet formula in the treatment of active peptic ulcer are as follows:

1. The buffering action of the amino acid mixture under discussion is not uniform in all patients and the antacid value of many of the newer hydrolysates remains to be tested. There is no proof at hand to indicate that the buffering action of the protein hydrolysate administered every two hours as originally advocated by Co Tui is superior to or even as efficient as the neutralization of gastric acidity which is accomplished by the orthodox ulcer management (hourly feedings of milk, nonsoluble antacids hourly and vagus depressants). In a recent publication, Co Tui and Garcia⁹ stated that it became necessary to administer the hydrolysate mixture more frequently (thirty minutes to one and one-half hours) in order to obtain prompt relief of pain in many patients. Six of 23 patients treated by the Co Tui plan by Hodges¹⁰ required feedings more frequently than each second hour for the first few days.

2. Little is known at present of the secondary gastric secretagogue effect of various amino acid mixtures now commercially available.

3. The concept that most patients with uncomplicated peptic ulcers have a protein deficiency has not been proved. Certainly the average private patient seen in the physician's office usually shows no measurable evidence of such deficiency.

4. No objective evidence has been offered to indicate that protein hydrolysates cause any more rapid healing of a gastric or duodenal ulcer than the orthodox feeding mixture of milk (hourly) with the nonabsorbable antacids and vagus depressants.

5. The original protein hydrolysate employed by Co Tui is so unpalatable that many patients are unable to take it without disagreeable side effects (nausea, anorexia and diarrhea).

8. Co Tui, Wright, A. M.; Mulholland, J. H.; Galvin T.; Barcham, I., and Gerst, G. R.: Hyperalimentation Treatment of Peptic Ulcer with Amino Acids (Protein Hydrolysate) and Dextri-Maltose, *Gastroenterology* 5: 5-17 (July) 1945.

9. Co Tui and Garcia, E.: The Hyperalimentation Treatment of Intractable Peptic Ulcers with Protein Hydrolysates and Dextri-Maltose, *Management of Gastro-Intestinal Disease*, Philadelphia, J. B. Lippincott Company, to be published.

10. Hodges, H. H.: Protein Hydrolysate Therapy for Peptic Ulcer, *Gastroenterology* 8: 476-493 (April) 1947.

A perusal of recent publications dealing with amino acid mixtures as the keystone for treatment of active peptic ulcer supplies no convincing evidence of their superiority over milk formulas in the well nourished patient.¹¹ There is every reason to believe that reliance on these mixtures alone and ignoring of the many items utilized by the experienced gastroenterologist in all-out therapy is unfortunate.

HORMONE THERAPY IN PEPTIC ULCER

Two hormones, elaborated in the body, when injected into Mann-Williamson dogs have proved most successful in the prevention of peptic ulcer, which ordinarily occurs in approximately 98 per cent of animals so prepared.¹² One of these hormones is enterogastrone, a chalone which is released by contact of the intestinal mucosa with fat. By chemical fractionation, extracts of intestinal mucosa have been prepared by Ivy and his associates.¹³ These extracts containing enterogastrone, when injected intravenously, inhibit gastric secretion and motility, thus simulating the action of endogenously released enterogastrone. Recently Ivy and Grossman have reported the results of the daily parenteral administration of enterogastrone in dogs prepared with the Mann-Williamson operation. In 76 per cent of the dogs an ulcer did not develop during the first year after operation. In similarly operated animals, not protected with enterogastrone, death occurred on an average of 3.8 months after operation. Treatment was discontinued in 28 Mann-Williamson animals that remained alive after having had enterogastrone injections for one year. In only 2 of these dogs did ulcer subsequently develop, at eighteen and twenty-eight months after cessation of treatment. Twenty-six of the animals survived from eleven to sixty months after therapy was stopped, dying of causes other than ulcer.

A second hormone (urogastrone), recovered from urine, when injected into the experimental Mann-Williamson animal, has an effect rather similar to that of enterogastrone on gastric acidity and motility.¹⁴ This material contains an element called anthelone (anti-ulcer) by Sandweiss, which when injected parenterally also greatly reduces the incidence of experimental ulcer in Mann-Williamson dogs. Furthermore, as with enterogastrone, in the Mann-Williamson animals so treated ulcer failed to develop for long periods of time after the injections of anthelone had been discontinued. Interestingly enough urogastrone is no longer secreted in the urine after hypophysectomy, indicating that the pituitary gland is in some way concerned with its manufacture.¹⁴ It is not known at present whether enterogastrone and urogastrone are the same substance; indeed, neither of them has been crystallized.

Ivy and his associates have treated 27 patients with chronic peptic ulcer by intramuscular injection of 200 mg. of intestinal extract containing enterogastrone,

11. Hodges¹⁰ tried the Co Tui plan in 26 patients. Three obtained no symptomatic relief. There was no roentgen evidence of improvement in 3 other patients (operation was required). Five of the remaining 20 patients with roentgen evidence of improvement had a recurrence of symptoms within one to five months after termination of therapy. Only 14 patients remained asymptomatic for one to eight months.

12. Ivy, A. C., and Grossman, N. I.: Present Status of Enterogastrone in the Therapy of Peptic Ulcer, Philadelphia, J. B. Lippincott Company, to be published.

13. Greengard, H.; Atkinson, A. J.; Grossman, M. I., and Ivy, A. C.: The Preparation of Parenterally Administered Enterogastrone in the Therapy of Peptic Ulcer, *Journal of Experimental and Clinical Peptic Ulcer*, (Dec.) 1946.

14. Sandweiss, D. J.: Enterogastrone, Anthelone and Urogastrone, *Gastroenterology* 5: 404-415 (Nov.) 1945.

dissolved in 4 cc. of water, six days a week. This treatment was continued for one year in 18 patients, and in 9 patients the injections were given for periods of five to ten months. In the first group 5 patients had recurrences during the treatment and 2 additional patients experienced recurrences after treatment had been discontinued—a total of 7 patients with recurrences among 18 patients treated. The authors considered this record to be much better than the anticipated results from ordinary clinical management of ulcer without enterogastrone injection, estimating that 60 per cent of patients may be expected to suffer relapses within two years after ordinary medical management. Their incidence of relapses was 39 per cent of 18 patients who had been under treatment for one year. Ivy and Grossman considered their experience as suggestive at least that intestinal extracts containing enterogastrone may prove beneficial in the prevention of recurrences in patients with peptic ulcer disease. Obviously the series of cases is too small and the follow-up too short as yet to come to a more definite conclusion. Ivy and his associates¹³ have recently stated that the oral administration of a crude extract of intestinal mucosa prevented ulcer from occurring in 75 per cent of 20 Mann-Williamson dogs and that when this treatment was discontinued the surviving animals failed to have ulcer in most cases. Up to this time there are no records of a large series of patients treated by oral administration of extracts containing enterogastrone with an adequate follow-up.

Sandweiss and his group have also been treating patients with antiulcer factors (anthelone) contained in urine extracts and have reported encouraging preliminary results. They warned against premature optimism, indicating that more purified and more concentrated extracts are needed and that a larger series of patients must be treated and observed over a long period of time before an accurate appraisal can be had. Up to this time no evidence has been forthcoming to indicate that hormones will prove of great value in the healing of ulcer. If they are to have any value in ulcer disease, evidently it will be in the prevention of recurrences.

SECTION OF THE VAGUS NERVES

How Commonly Should Vagus Interruption Be Employed in the Treatment of Peptic Ulcer Even If Its Efficacy Were Proved?—In most patients with uncomplicated duodenal¹⁵ ulcer (probably 60 per cent) an adequately arranged medical regimen results in satisfactory relief (five years or longer). Another 25 per cent have recurrences which can be satisfactorily controlled without significant economic loss or prolonged discomfort. In approximately 10 to 15 per cent the results are unsatisfactory because of obvious complications or intractability. It is only in this latter group that surgical procedures of any kind are considered. In a large number of these because of obstruction or plastering of the ulcer, vagotomy alone should not be undertaken. By these criteria, section of the vagus fibers might come up for consideration in approximately 5 per cent of ulcer patients not operated on. This would comprise almost entirely those ulcer sufferers who have strongly positive insulin reactions,

whose attacks seem related to emotional incidents and those who, in spite of a thorough understanding of the total ulcer problem, are unable to avoid severe recurrences. Even though vagus section accomplished the results expected of it, it should never be recommended until adequate medical therapy, including attention to all known etiologic factors, has been given a thorough trial—if for no other reason than the present known record that the most sanguine statistics indicate results satisfactory to the patient in not more than 80 per cent. It is unfortunate that the criteria mentioned here were not fulfilled in many instances before vagus section was so frequently performed in many clinics.

What Is the Rationale of Vagus Section for Peptic Ulcer?—It was hoped that a severance of nervous pathways between the brain and stomach would: (1) effectively abolish the cephalic phase of gastric secretion (Pavlov's experiments reported in 1910¹⁶ proved that the vagus nerves in the dog are the pathways for the stimuli which excite the psychic phase of gastric secretion); (2) reduce or abolish excessive interdigestive and night secretion of hydrochloric acid in the stomach; (3) reduce excessive motor activity of the stomach and duodenum; (4) abolish the harmful effects on the gastric circulation which might be of emotional origin (color changes in the gastric mucosa due to vascular congestion induced by resentment and anger were noted by Stewart Wolf¹⁷ prior to a vagotomy but did not occur after vagus section in a patient operated on by Andrus), and, (5) as a result of these effects on the stomach, encourage healing of active ulcer and prevent recurrences.

How Complete Must Vagus Denervation of the Stomach Be in Order to Accomplish These Anticipated Results?—It has been shown repeatedly in both animals and man that the desiderata which have been set forth may not be accomplished unless all the vagus fibers are interrupted (however, an inhibiting effect on gastric secretion and motility has been reported in some instances when the vagus denervation of the stomach has not been complete). It was in order to accomplish complete vagus denervation of the stomach that Dragstedt adopted the operation of supradiaphragmatic vagotomy.

Is Complete Interruption of the Vagus Fibers to the Stomach Always Possible?—Evidently complete interruption is not possible. Those students who have closely studied the anatomy of this region point out that variation in the course and number of vagus fibers both above and below the diaphragm is so great that it would be impossible in some instances to interrupt all the fibers.¹⁸

The accepted test for determining the presence of intact nerve fibers after vagus operations is the insulin test.¹⁹ If this test is used as a criteria of continuity of the vagus, then the most expert surgeon fails to sever all fibers at times even when the operation is

16. Pavlov, I. P.: *The Work of the Digestive Glands*, ed. 2, London, C. Griffin & Co., 1910.

17. Wolf, S., and Andrus, W. D.: *The Effect of Vagotomy on Gastric Function*, *Gastroenterology* 8: 429-434 (April) 1947.

18. Bradley, W. F.; Small, J. T.; Wilson, J. W., and Walters, W.: *Anatomic Considerations of Gastric Neurectomy*, *J. A. M. A.* 133: 459-461 (Feb. 15) 1947. Miller, E. M., and Davis, C. B.: *An Anatomic Study of the Vagus Nerves*, *J. A. M. A.* 133: 461-462 (Feb. 15) 1947. Hawthorne, H.: Personal communication to the author.

19. Weinstein, V. A.; Colp, R.; Hollander, F., and Jemerin, E. E.: *Vagotomy in Therapy of Peptic Ulcer*, *Surg., Gynec. & Obst.* 79: 297-305 (Sept.) 1944. Hollander, F.: *The Insulin Test for the Presence of Intact Nerve Fibers After Vagal Operations for Peptic Ulcer*, *Gastroenterology* 7: 607-614 (Dec.) 1946.

15. Patients with gastric ulcer probably should not be exposed to supradiaphragmatic operations because of the inability to inspect the lesion and excluded carcinomatous ulcer.

performed by the transthoracic route. Three of 8 patients recently subjected to this operation by Weinstein and Colp²⁰ had positive insulin reactions after operation (however, these 3 were relieved of pain). I know of no large reported series of cases of vagus section in which the reaction to the insulin test was invariably negative after the operation.

It is this effort to sever all fibers of the vagus going to the stomach which caused surgeons to try the transthoracic approach and which has caused some to prefer actual vagus resection to simple vagotomy.²¹ I have stated that the postoperative insulin test is evidently a method of distinguishing between complete and partial vagotomy. One wonders whether the degree of delay in stomach emptying may not also measure to some extent the completeness of the vagotomy. Perhaps those patients who have had the most complete vagotomies are those whose stomachs empty most poorly or not at all after operation. I have 1 patient who was operated on Sept. 14, 1946, who up to this time (May 1947) requires "urecholine" (carbaminoyl-beta-methylcholine chloride) two to three times daily in order to empty his stomach. His reaction to the insulin test is negative; yet the hydrochloric acid titer of his fasting stomach is 90 units if no "urecholine" is taken after supper the night before.

It is because of this unphysiologic side effect of vagotomy (delay in stomach emptying) that Dragstedt and others are now looking with favor on the abdominal approach—infra-diaphragmatic vagotomy combined with gastrojejunostomy. Thus the initial thesis, that the transthoracic approach makes it possible to accomplish a more nearly complete vagotomy, is being abandoned in some clinics. In this connection perhaps it should be mentioned that there is no proof that gastroenterostomy will invariably function satisfactorily in the vagotomized stomach. This swinging of the pendulum in some clinics toward the subdiaphragmatic operation would appear to be an admission that the side effects of a complete vagotomy are undesirable. The only other valid conclusion to be drawn from this change of heart would be that the cases selected for the supradiaphragmatic operation were poorly chosen, many with associated obstructive lesions having been included.

Side Effects of Vagus Interruption.—Many physiologically minded clinicians have been concerned about the increased popularity of so-called complete vagotomy in the treatment of peptic ulcer because of possible interference with important functions of the stomach, pancreas, biliary tract and intestines. Many years ago Pavlov noted that complete vagotomy in dogs resulted in a lack of stomach emptying and subsequent death of the animals of subnutrition. Hartzell²² made no mention of gastric dilatation or faulty nutrition in his vagotomized dogs, but their survival time was not given. Complete vagotomy in rats, according to Shay and Komarov,²³ results in death of the animals within ten days if they are allowed to partake of their stock diet. The stomach and esophagus of these animals were dilated and filled with food residue. It is well

to keep in mind the statement of Necheles,²⁴ "we will have to wait for many years to know the trophic effects of section of the vagi on such organs as the pancreas, the liver, the intestinal mucosa, etc."

There is evidently little risk involved in doing the supradiaphragmatic vagotomy, judging from the reports emanating from many clinics. However, both Weeks and co-workers²⁵ and Moore and his associates²¹ have reported a death, evidently the result of cardiac standstill following vagotomy.

The most important undesirable side effects of vagus section are those due to disturbances in motility of the digestive tract. So-called achalasia or cardiospasm, to be anticipated, has not been reported frequently. Diarrhea may be troublesome. It occurred in 40 per cent of 30 patients reported by Ruffin and Smith.²⁶ Evidently it was mild and caused little inconvenience. In these same patients gastric motility was profoundly affected by vagotomy in each instance. Peristaltic waves were absent and gastric dilatation occurred. Apparently the tone of the stomach returned toward normal after several months. Subsequent gastroenterostomy or pyloroplasty was required in 3 of the 30 patients subjected to vagotomy by Ruffin and Smith. Many others have had a similar experience. Fortunately Machella and his associates²⁷ have found "urecholine" effective in increasing gastric tonus and initiating contraction waves in the atonic stomach, the result of vagotomy. The use of the drug has now obviated the necessity of reoperation in a number of instances. Evidently rather often the delay in emptying following vagotomy disappears in several months, and during this time "urecholine" may be used.

Dorsolumbar sympathectomy for hypertension should not be performed in patients who have had peptic ulcer. Blegen and Kintner²⁸ reported a patient who suffered three severe hemorrhages from a prepyloric ulcer following this operation, who was subsequently subjected to subtotal gastrectomy. Weeks and co-workers²⁵ performed a transthoracic vagotomy for duodenal ulcer and a left thoracolumbar sympathectomy for hypertension. The ulcer pain was relieved. However, fifteen days after the second stage right thoracolumbar sympathectomy, the patient died of perforation of the duodenal ulcer without having experienced pain.

An Appraisal of Results of So-Called Complete Vagotomy.—1. The cephalic phase of gastric secretion measured by the insulin test,²⁹ by sham feedings and by reduction in volume of night secretion^{29a} is either abolished or greatly diminished by intrathoracic vagotomy. The secretory response to insulin if abolished by the operation remains absent at the end of a year.²¹ However, even now there are too few published reports of satisfactorily performed insulin tests late after vagotomy to indicate that the reaction to the insulin test will remain permanently negative. It should be recalled

24. Necheles, H., in discussion on Symposium on Peptic Ulcer with Particular Reference to Vagotomy, *Gastroenterology* 7: 622 (Dec.) 1946.

25. Weeks, C.; Ryan, B. J., and Van Hoy, J. M.: Two Deaths Associated with Supradiaphragmatic Vagotomy, *J. A. M. A.* 132: 988-990 (Dec. 21) 1946.

26. Ruffin, J. M., and Smith, R. C.: The Treatment of Peptic Ulcer with Special Reference to Vagotomy, *Am. Pract.* 1: 118-120 (Nov. 1) 1946.

27. Machella, T. E.; Hodges, H. H., and Lorber, S. H.: The Restoration of Gastric Motility by Urethane of B-Methyl Choline After Section of the Vagus Nerves for Peptic Ulcer, *Gastroenterology* 8: 36-51 (Jan.) 1947.

28. Blegen, H. M., and Kintner, A. R.: Aggravation of Gastric Ulcer Following Dorsolumbar Sympathectomy, *J. A. M. A.* 133: 1207-1208 (April 19) 1947.

29. (a) Thornton, T. F., Jr.; Storer, E. H., and Dragstedt, L. R.: Supradiaphragmatic Section of the Vagus Nerves, *J. A. M. A.* 130: 764-771 (March 23) 1946. (b) Grimson, J. S., in discussion on Thornton,^{29a} p. 769. (c) Moore, Chapman, Schulz and Jones.²¹

and Colp, R.: Supradiaphragmatic Vagotomy in Following Subtotal Gastrectomy for Duodenal America 27: 249-253 (April) 1947.

22. Hartzell, J. B.: The Effect of Section of the Vagus Nerves on Gastric Acidity, *Am. J. Physiol.* 91: 161-171 (Dec.) 1929.

23. Komarov, S. A., in discussion on Symposium on Peptic Ulcer with Particular Reference to Vagotomy, *Gastroenterology* 7: 620 (Dec.) 1946.

that postprandial acidity is rarely abolished by this operation, as it is so frequently after large subtotal gastrectomy performed for peptic ulcer. The gastric secretory response to histamine and to caffeine is unaffected. Consequently, if in many instances of peptic ulcer the initiating influence is not vagal in origin, the vagotomy cannot be expected to prevent recurrences.

2. The decreased tonus and diminished amplitude of contractions of the stomach wall, noted invariably after complete vagotomy, are evidently not always lasting. The motor activity of the resting stomach was practically normal one year after operation in the patients of Moore and his colleagues. Furthermore, the extreme delay in stomach emptying experienced by many patients after intrathoracic vagotomy gradually disappears after several months, according to most observers (however, 1 of my patients must take "urecholine" daily, eight months after intrathoracic vagus resection, in order to empty his stomach and maintain normal nutrition³⁰). Obviously, as stated by Moore and co-workers, if interruption of the vagus nerves is to have a lasting effect in the prevention of recurrences of ulcer, this effect cannot be related to changes in fasting acidity or gastric motility.

3. Perhaps any lasting benefit which is to be derived from this operation may depend on an interruption of those cephalic impulses caused by emotional incidents which give rise to vascular change in the stomach (observation of Stewart Wolf¹⁷ previously cited). It remains to be seen whether this observation of Wolf will be borne out by further study and, if so, whether the desired absence of such vascular change in the mucosa of emotional origin will be permanent.

4. All observers have agreed that relief of pain is usually prompt and all evidence suggests that active ulcers usually heal promptly after intrathoracic vagotomy. It is of interest that relief of pain is not always dependent on an absence of interdigestive or cephalic gastric secretion and does not always depend on a severance of all vagus fibers (observation of Weinstein and Colp²⁰ previously mentioned). Pain initiated by an appropriate gastric stimulus can be experienced by the patient after vagotomy if a dorsolumbar sympathectomy has not been performed.

The citation of all observers that relief of pain is immediate is not the important issue here. Ulcer pain in many of these patients could have been promptly relieved by a medical regimen, including hourly feedings, atropinization and antacids. Our concern is with prevention of recurrence and cure of the disease. Recurrences of ulcer are being reported following intrathoracic vagotomy; yet up to this time they have not exceeded 10 per cent of patients subjected to operation. Too little time has elapsed to be able to state what the ultimate results will be so far as the cure of ulcer is concerned. It is clear, however, that the rate of cure will not approach 100 per cent, and it is doubtful whether the results will be any better than or as good as an expertly performed high subtotal gastric resection with or even without an infradiaphragmatic partial vagotomy.

SUMMARY

I believe that the operation of complete intrathoracic vagus interruption or resection remains an experimental procedure. A complete interruption of the vagus inner-

vation of the stomach is not always possible, and it may yet prove to be undesirable because of late side effects. Until the final results of adequate follow-up are available it should not be undertaken lightly in the patient who has not been operated on. Only patients with duodenal ulcer who have a strongly positive reaction to the insulin test and a history suggesting emotional influences in the initiation of attacks and who have not responded to really adequate medical treatment should be considered as candidates for the experiment. Gastric ulcer or delay in stomach emptying in duodenal ulcer should be looked on as contraindications. The operation should be undertaken only by surgeons thoroughly experienced in the procedure. It is not without danger. At this time, I believe that intrathoracic vagotomy can be considered the operation of choice only in those patients who have experienced recurrence of ulcer after a large subtotal gastrectomy which has included ablation of the antral and pyloric mucosa.

NOTE:—One year after vagus resection stomach emptying has improved sufficiently to permit of discontinuance of "urecholine."

ABSTRACT OF DISCUSSION

ULCERATIVE COLITIS

QUESTION: Are antibiotics useful in the treatment of chronic ulcerative colitis?

ANSWER: Most clinicians have had little success with the use of antibiotics in the chronic stage of chronic ulcerative colitis. Occasionally, a remission has been experienced during the course of administration of penicillin and of streptomycin, but in these instances there is little proof to indicate that the improvement may not have been dependent on comprehensive therapy including mental and physical rest, rather than on the so-called specific agent. Some clinicians have reported good results in the treatment of the acute fulminating febrile type of ulcerative colitis. One of these is Dr. Burrill Crohn, who administered 0.5 Gm. of streptomycin by mouth and 0.5 Gm. intramuscularly every six hours for forty-eight hours. Others have reported improvement in acute fulminating ulcerative colitis which seemed to be related to the administration of penicillin. I have had this experience in a few instances. Certainly, these agents should be tried, particularly in the fulminating stage of the disease, but all other methods of therapy should be included in the regimen with particular emphasis on the maintenance of good nutrition.

VAGOTOMY AND DUODENAL ULCER

QUESTION: Is vagotomy a satisfactory surgical treatment of simple duodenal ulcer with intractable pain?

ANSWER: I do not believe that complete vagotomy alone can be looked on as satisfactory surgical treatment for duodenal ulcer in most instances. My experience has been that if surgical treatment is necessary in duodenal ulcer, complications, particularly that of plastering of the ulcer, necessitate the more radical, large, subtotal gastrectomy. My present feeling about vagotomy is discussed in some detail in the paper.

ANTACIDS

QUESTION: What are the most effective antacids?

ANSWER: Antacids have a place in the management of many patients with peptic ulcer disease; they may be divided into (1) soluble antacids and (2) nonabsorbable antacids. The former group are not utilized to the point of causing complete neutralization of gastric acidity by most gastroenterologists today. They have lost favor because of their tendency to encourage the development of alkalosis, on one hand, and because of their secondary gastric secretory effect, on the other. However, a combination of soluble antacids including calcium carbonate, magnesium oxide and sodium bicarbonate every third or fourth hour in the active stage of ulcer management often works well.

30. See note at end of paper.

Nonabsorbable antacids are more popular at present. In this group, perhaps one could include the newer anion exchange resins and the detergents (sodium alkyl sulfate). Theoretically both of these groups of substances perhaps have the advantage of buffering the acid and reducing the peptic activity and perhaps even encourage the stimulation of mucin without having any secondary gastric secretory effect or any deleterious effect on the acid-base balance of the blood. However, insufficient clinical trials have been reported to justify the widespread use of these substances until certain disadvantages have been overcome. The most widely used nonsoluble antacids remain aluminum hydroxide gel, aluminum phosphate gel and magnesium trisilicate. The combination of magnesium trisilicate and aluminum hydroxide prepared in tablet form by several manufacturers has proved efficient in treatment of my patients.

RAPID EMPTYING OF STOMACH

QUESTION (Dr. Joseph Bank, Phoenix, Ariz.): What can be done to relieve symptoms due to rapid emptying of the stomach after partial gastrectomy?

ANSWER: This is a very difficult question because, in the first place, one must know why the stomach is emptying too rapidly, and in many instances it is the result of an improperly performed gastrectomy. Usually, I have adopted the plan of continuing the patient on frequent feedings of rather small quantities containing a rather large amount of fat, preferably in the form of cream. Furthermore, large doses of atropine or belladonna may be of benefit in these cases. Of course, in some instances some thought might be given to the gastrogenous type of diarrhea by the administration of appropriate doses of hydrochloric acid. I think that type of treatment should be held in abeyance until the dietary plan and antispasmodics have been utilized.

CURE OF PEPTIC ULCER

QUESTION (Dr. J. R. Bleich, Atlanta, Ga.): Do you think it likely that any one procedure will ever suffice to cure peptic ulcer? Or do you believe that treatment will have to be continuous throughout the life of the patient?

ANSWER: To answer this question adequately would require one hour. First, one must define what is meant by "cure." If one means the failure of slight epigastric distress to appear at any time in the future following adequate medical therapy, then one could say that perhaps not more than 25 per cent of patients with duodenal ulcer are cured by medical management. However, more nearly 75 per cent of patients who are adequately treated medically for duodenal ulcer, including advice for the prevention of recurrences, remain sufficiently well so that they suffer no economic loss and are soon relieved of their recurrences of minor distress by resuming at once a strict regimen for a brief period of time. Many of these patients can lead a fairly normal life providing they are alerted to the necessity of resuming a strict regimen at the very beginning of a recurrence.

Subtotal gastrectomy adequately performed by an expert has resulted in a large percentage of so-called five year cures, and many of these patients are leading normal lives. I think that it should be remembered that only about 10 per cent of patients with peptic ulcer disease get into really serious difficulty so as to require major operations. At this writing there is no therapeutic agent which offers a guarantee against recurrence of ulcer even though it be continued throughout life.

ENTEROGASTRONE

QUESTION: Please explain in what way enterogastrone affects healing of the ulcer? Why is it called a hormone?

ANSWER: I know of no proof that the administration of enterogastrone does affect the healing of an individual peptic ulcer. We have experimental evidence to suggest that injections of this material prevent the recurrence of experimental peptic ulcer in the Mann-Williamson animal and that, in addition for a year or more after the discontinuance of the injections of enterogastrone the animal is protected against the development of peptic ulcer. In those few clinics where the material has been used in the treatment of active ulcer, the evidence does not suggest that the material has any remark-

able effect on the healing of a particular ulcer. Both enterogastrone and urogastrone when injected parenterally into the animal inhibit gastric secretion and motility, and it is possible that some element in the crude extract may beneficially affect the gastric mucosa and encourage healing; the proof is not at hand up to this time. In referring to the question related to terminology, if "hormone" is used in its strict sense as a substance which is excitatory, then perhaps it should not be applied to enterogastrone, which is really a chalone; i. e., an internal secretion which depresses activity.

HYPERTENSION AND VAGOTOMY

QUESTION (Dr. Morris J. Levine, Miami Beach, Fla.): Does hypertension constitute a serious contraindication to vagotomy?

ANSWER: I think that one might safely say that a bilateral dorsolumbar sympathectomy may well have a deleterious effect on the patient with peptic ulcer if for no reason other than the fact that ulcer pain would not be experienced unless the serosa was involved. Ulcer complications have been reported in several cases in which both vagotomy and bilateral dorsolumbar sympathectomy have been performed on the same patient. I am not sure that proof is at hand that severance of the vagus fibers has an unfavorable effect on patients with hypertension, although theoretically one might consider that possibility. I do believe that the risk of complete intrathoracic vagotomy might be increased in patients with hypertension.

HYDROCHLORIC ACID AND PEPTIC ULCER

QUESTION (Dr. Meyer Golob, New York): Has not too much emphasis been placed on hydrochloric acid in the genesis of peptic ulcer? What about the cases of hyperchlorhydria in which ulcer does not develop and the cases of achlorhydria—admittedly ulcers develop in a small percentage? Surely vagotomy should not be singled out as the only agent to combat postoperative hypersecretory activity.

ANSWER: Obviously, hyperchlorhydria alone does not cause peptic ulcer. The hydrochloric acid and pepsin can be looked on only as the attacking force when the antiulcer factors normally present have been weakened or removed. It is true, however, that most clinicians believe that peptic ulcer cannot develop in the stomach which is incapable of secreting hydrochloric acid. I personally know of no authentic instance of active peptic ulcer in a patient who had consistently a histamine refractory achylia gastrica.

VAGOTOMY

QUESTION (Dr. Albert M. Yunich, Albany, N. Y.): What has been your personal experience with vagotomy? In the light of present knowledge, when do you recommend vagotomy?

ANSWER: That is an embarrassing question, because up to this time I have considered that vagotomy alone, when the patient has not previously had a gastrectomy, is an experiment. Three of my patients have been subjected to intrathoracic vagotomy, and 1, after operation, had a positive reaction to the insulin test and subsequently had a recurrence of ulcer symptoms, at the end of three months. The second patient was operated on last September, and the stomach has never emptied without the aid of "urecholine" since the date of that operation. His reaction to the insulin test remains negative. He is being kept as an experimental guinea pig, with his consent, because most persons believe that the motor-emptying function improves after vagotomy after a period of three, four, five or six months. It is now nine months and there has been no improvement (see note, page 297, at end of paper). The third patient has had a satisfactory result. He had a large subtotal gastrectomy, at which time the pylorus and the mucosa had also been removed. He returned with a gastroduodenal ulcer and has had a complete relief of symptoms which is now of six months' duration.

At present, I should not recommend intrathoracic vagotomy in the treatment of peptic ulcer unless the patient had previously had a large subtotal gastrectomy and unless a gastrojejunal ulcer had developed. A decision has not yet been reached concerning how many patients should have vagotomy combined with other types of gastric operation, such as gastroenterostomy or subtotal gastrectomy. It will require two

or three years before it is known just how valuable this additional procedure of vagotomy may be in the management of peptic ulcer disease, in my opinion.

USE OF HISTAMINE IN PEPTIC ULCER

QUESTION: Have you any opinion on the use of histamine in peptic ulcer?

ANSWER: I have an opinion but it is probably valueless because I have had no experience. It would not be the type of substance that I should be inclined to use in the management of peptic ulcer because of its great stimulating effect on gastric acidity.

PROTEIN HYDROLYSATES

QUESTION: Woolley has stated that the regeneration and growth factors of protein hydrolysate are not found in acid hydrolysates. Enzymatic protein digests, he said, depend on their streptogenin content, which is estimated by its ability to stimulate *Lactobacillus casei*. The physician cannot at present tell a good hydrolysate from a poor one. Do you not think that if a poor enzymatic protein digest is used the increase in oxygen-carrying power of blood is important? Toxic protein destruction present in neurocirculatory asthenia and duodenal and peptic ulcer is stopped and cured by enzymatic protein digests containing streptogenin.

QUESTION (Dr. H. N. Vermilye, New York): Why criticize protein hydrolysates which do not come up to Woolley's standard? Enzymatic protein digests, according to Woolley, depend on their streptogenin factor, which is measured by stimulation of *Lactobacillus casei*. Streptogenin factor stimulates protein synthesis from amino acids supplying this factor in toxic protein destruction—supplies a deficiency found in cases in which digestive ability cannot supply it.

ANSWER: My opinion concerning the value of protein hydrolysates in the management of peptic ulcer has been covered in the paper.

ADDITIONAL SURGICAL PROCEDURES

QUESTION (Dr. Emanuel Deutsch, Boston): Are additional surgical procedures such as posterior gastroenterostomy of benefit in recently vagotomized patients for uncomplicated duodenal ulcer when symptoms of delayed emptying time of stomach are predominant?

ANSWER: Additional surgical procedures have been used, in many instances, to overcome the delayed emptying time of the stomach following vagotomy. So far there are insufficient reports in the literature to pass judgment on the efficacy of gastroenterostomy performed for this purpose; evidently it does prove adequate in relieving the gastric stasis in many instances. However, it is highly likely that in some vagotomized stomachs even gastroenterostomy will not result in satisfactory stomach emptying. At present it seems advisable to use "urecholine," as recommended by Machella, to overcome the gastric stasis following vagotomy. This drug evidently works splendidly, and in some instances after some months the motor function of the stomach may improve sufficiently so that a subsequent drainage operation may not be necessary.

VALUE OF LIPOCAIC

QUESTION (Dr. S. J. Rugel, Philadelphia): Is lipocaic of any value in cases of hypertrophy of the liver associated with high blood fats?

ANSWER: Dragstedt and his co-workers have described two types of fatty infiltration, occurring in association with diabetes. One was attributed to uncontrolled diabetes, being characterized by a high blood lipid concentration, acidosis and relief by insulin. In the other form a low blood lipid concentration was noted, associated with impaired hepatic function, decreased secretion of dextrose and increased sensitivity to insulin. This latter type of change was relieved by lipocaic and not by insulin. I have had no experience with the use of lipocaic in cases of hypertrophy of the liver presumed to be the result of fatty infiltration, associated with high blood fats. Theoretically one would expect some benefit from the use of lipotropic substances in conjunction with a diet high in protein and low in fat.

RECENT ADVANCES IN THE TREATMENT OF CARDIOVASCULAR DISEASE

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Advances in the treatment of heart disease rarely can be referred to any one year. Rather they represent increments of knowledge accumulated over many years. While the treatment of cardiovascular disease is ever progressing, the efficacy of certain advances has been sufficiently well established to warrant mention of them in this summary. In recent years an encouraging number of successful procedures in the treatment of heart disease have been devised which constitute real advances.

CONGESTIVE HEART FAILURE

Digitalis.—It is customary to standardize preparations of digitalis in terms of cat units, a unit being defined as the dose of the drug that is lethal for cats. It is unfortunate that glycosides of digitalis are tested for potency by intravenous administration whereas oral administration is more common when they are used clinically. Gold¹ has shown that among preparations of digitalis there is a great variation in the degree of absorption. Whereas only about 20 per cent of preparations of the digitalis leaf or of the tincture of digitalis is absorbed in the gastrointestinal tract, practically 100 per cent of digitoxin is absorbed. It is noteworthy that only about 10 per cent of an oral dose of lanatoside C is absorbed by the gastrointestinal tract.

Since oral administration is the route of choice in giving digitalis, it is advantageous to have a drug which is absorbed completely. Digitoxin fulfils this requirement perfectly. It is feasible to administer orally a full digitalizing dose (1.2 mg.) of digitoxin with minimal prospect of gastrointestinal irritation by virtue of the small bulk of the drug required to produce the desired effect. When given orally the quantity of lanatoside C (6 to 10 mg.) or of digitalis leaf (1.2 to 1.5 Gm.) required to produce a similar effect leads to nausea and vomiting before a sufficient amount of these drugs is absorbed to produce a full digitalizing effect. Except in emergencies, it is preferable to administer less than a digitalizing dose initially and to achieve full digitalization gradually by the administration of suitable additional daily doses of digitoxin. In this way one can stop short of producing uncomfortable and sometimes dangerous toxic manifestations.

From these statements it should not be inferred that satisfactory effects of digitalis cannot be obtained by a variety of standard preparations of the drug. However, since there is a variation in the percentage of their absorption by the gastrointestinal tract, a considerable experience with a particular preparation is necessary to use it wisely.

It is seldom necessary to administer digitalis parenterally. If vomiting precludes the administration of the drug by mouth or if the situation is so grave that prompt action is required, then it is justifiable to give

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Read in a Panel Discussion on Recent Advances in Treatment before the joint meeting of the Section on Internal Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

1. Gold, H.: Pharmacologic Basis of Cardiac Therapy, J. A. M. A. 132: 547-554 (Nov. 9) 1946.

a digitalis glycoside by the intravenous route. Since ouabain, when given intravenously, attains its full effect in two hours, it is the preparation of choice for quick action. An initial dose of 0.3 mg. given intravenously may be followed by intravenous injections of 0.1 mg. at intervals of two to three hours until a satisfactory effect has been obtained. It is useful to bear in mind that a dose of 3 to 5 cat units of lanatoside C, "digifolin" or digitoxin will produce a satisfactory effect of digitalis when given intravenously, but the action of these preparations is less prompt than that produced by ouabain when similarly administered.

Mercurial Diuretics.—The congestive heart failure of many patients is not adequately controlled by treatment with digitalis. It is well understood that the administration of mercurial diuretics to such patients is indispensable. It is not so well understood that mercurial diuretics are extremely useful in keeping a patient free of edema. It must be remembered that patients can accumulate 7 to 8 pounds (3.2 to 3.6 Kg.) of fluid before its presence is manifested by edema of the dependent portions of the body or by signs of pulmonary congestion. The patient may be aware of the edema because he notes the onset of dyspnea. It is useful and important to forestall the development or minimize the degree of this edema. To accomplish this, Gold² advocated the daily injection of 1 to 2 cc. of a mercurial diuretic. Since such frequent injections are burdensome to both patient and physician and since the injection often may not be needed, some more practical guide to the need for injections of mercurial diuretics should be sought. One method which I have found successful is to instruct the patient to weigh himself daily. Under standard conditions a sudden gain of 2 to 4 pounds (0.9 to 1.8 Kg.) should be a signal for him to report to his physician for an injection of a mercurial diuretic. Under such a plan it has been found that the need for injections of mercurial diuretics varies from three times a week to once in two weeks or longer, and yet the patient is protected from dyspnea or the development of more than a minimal amount of latent edema.

It should be emphasized also that the rigid restriction of salt to 1.5 to 2.0 Gm. daily has greatly diminished the need for the administration of mercurial diuretics in cases of congestive heart failure.

Restriction of Sodium and Allowance of Fluid.—Recently, Warren and Stead³ found that edema would develop in patients who had recovered from previous congestive heart failure if an excessive amount of salt was added to their diets. Under these circumstances the patients gained weight, the total volume of the blood plasma increased, the concentration of the plasma proteins decreased initially, the hematocrit determinations decreased and all of these events preceded an increase in venous pressure. Whether or not one accepts their interpretation that this failure of the kidney to excrete salt is due to the decreased output of a diseased heart and that this failure constitutes the common mechanism of heart failure, nevertheless it serves to focus attention again on the importance of sodium in the genesis of edema.

Since about the turn of the century it has been known⁴ that patients suffering from heart disease excreted sodium poorly and that the blood sodium did not increase. From these observations it was inferred that ingested salt contributed to the edema. Renewed interest in this problem was brought about by the challenging work of Schemm,⁵ who advocated a program comprised of a very large allowance of water, a sharp restriction of salt, an acid-ash diet, the use of acid-producing drugs and, occasionally, the supplemental administration of mercurial diuretics in the treatment of refractory congestive heart failure. Further studies⁶ have indicated that restriction of salt ingestion to 1.5 to 2.0 Gm. daily is the most essential feature of this program, and in a recent discussion White⁷ stated that some patients receiving such an allowance of salt remained free of edema even though their allowance of fluid was low. In a group of patients suffering from congestive heart failure who were kept on a greatly restricted intake of salt, Gorham and his associates⁸ studied the diuretic effect of increasing intake of fluid. They found that diuresis was enhanced by increasing the intake of fluid up to 3 L. a day, but beyond that, increasing amounts of fluid did not materially augment the diuresis. This evidence indicates that patients on a diet low in sodium do best when they are allowed to take as much water as they desire, up to 3 L. a day. It must not be forgotten that renal function in heart failure is compromised by a reduced cardiac output and sometimes by intrinsic renal disease. Under these circumstances there may still remain instances in which an intake of fluid in excess of 3,000 cc. daily may be required to secure a satisfactory diuresis.

HYPERTENSION

Diet.—In recent years, Kempner⁹ has advocated a diet, which is known as a rice diet, in the treatment of hypertensive states which may or may not be associated with demonstrable nephritis. This diet contains no protein of animal origin and has a content of sodium of 0.15 Gm. daily. Kempner observed objective improvement in about two thirds of the patients suffering from hypertension who were treated with this diet. Objective evidences of improvement included: a significant drop in blood pressure, a decrease in size of the heart, often definite improvement in important electrocardiographic abnormalities, a return to normal values of increased levels of nitrogen and cholesterol in the blood and a definite decrease in the changes in the retinal arteries, which are characteristic of hypertension.

Kempner¹⁰ predicted the beneficial results of this diet on the assumption that hypertension causes impair-

2. Gold, H.: Treatment of Heart Failure, *Interne*, January 1946, pp. 18-23.

3. Warren, J. V., and Stead, E. A., Jr.: Fluid Dynamics in Chronic Congestive Heart Failure: An Interpretation of the Mechanisms Producing the Edema, Increased Plasma Volume and Elevated Venous Pressure in Certain Patients with Prolonged Congestive Heart Failure, *Arch. Int. Med.* 73: 138-147 (Feb.) 1944.

4. Achard, C., and Loeper, M.: Sur la rétention des chlorures dans les tissus au cours de certains états morbides, *Compt. rend. Soc. de biol.* 53: 346-347 (March 23) 1901. Merklen, P.: La rétention du chlorure de sodium dans l'œdème cardiaque, *Bull. et mém. Soc. méd. d. hôp. de Paris* 20: 725-731 (June 19) 1903. Widall and Lemierre: Pathogénie de certains œdèmes brightiques, *Action du chlorure de sodium ingéré*, *ibid.* 20: 678-699 (June 12) 1903.

5. Schemm, F. R.: A High Fluid Intake in the Management of Edema, Especially Cardiac Edema: I. The Details and Basis of the Régime, *Ann. Int. Med.* 17: 952-969 (Dec.) 1942; II. Clinical Observations and Data, *ibid.* 21: 937-976 (Dec.) 1944.

6. Wheeler, E. O.; Bridges, W. C., and White, P. D.: Diet Low in Salt (Sodium) in Congestive Heart Failure, *J. A. M. A.* 133: 16-19 (Jan.) 1947.

7. White, P. D.: Unpublished data.
8. Gorham, L. W.; Lester, D. E.; Wolf, A. V., and Shultz, H. H.: The Relative Importance of Dietary Sodium Chloride and Water Intake in Cardiac Edema, unpublished data.

9. Kempner, W.: Compensation of Renal Metabolic Dysfunction: Treatment of Kidney Disease and Hypertensive Vascular Disease with Rice Diet; III., *North Carolina M. J.* 6: 61-87 (Feb.) 117-161 (March) 1945.

10. Kempner, W.: Some Effects of the Rice Diet Treatment of Kidney Disease and Hypertension, *Bull. New York Acad. Med.* 22: 358-370 (July) 1946.

ment of function of the cells of the kidneys, presumably because the supply of oxygen available to these cells is decreased. As a result, the kidneys are affected by impairment of their capacity to deaminate amino acids, oxidize keto acids and form ammonia, and this failure leads to hypertension. Kempner substituted vegetable for animal proteins on the theory that the injured kidney in hypertension can no longer excrete properly the catabolic products of animal proteins. It has been calculated that 76 per cent of all the work of the kidney is spent on the excretion of urea. The concentration of urea nitrogen in the total volume of urine excreted in twenty-four hours is one fifth less in patients on a rice diet than in those on a starvation diet and, hence, the diet greatly decreases the work of the kidney.

It will be admitted by all that the rice diet is a monotonous diet. Grollman¹¹ found that the restriction of sodium results in a pronounced decrease in blood pressure in rats in which hypertension had been induced experimentally. Believing that perhaps the restriction of sodium in the rice diet was the essential factor in its beneficial effect on hypertension, this investigator and his associates¹² treated 6 patients who had hypertension by a more general diet containing animal proteins but only 0.5 Gm., or less, of sodium daily. In some of these cases they observed a striking decrease in blood pressure comparable to that observed when the more rigid and monotonous rice diet was used. These observers have not reported the effect of the restriction of sodium on the sodium, potassium, chloride and urea levels in the blood and urine for comparison with the results obtained by Kempner for patients who were treated with the rice diet.

These observations open up a new approach to the treatment of hypertension by dietary measures which deserve further study under carefully controlled conditions. Such studies should provide better agreement on the optimal composition of such a diet and should define its indications and limitations.

SUBACUTE BACTERIAL ENDOCARDITIS

When penicillin was first used in the treatment of subacute bacterial endocarditis, there were so many failures that many clinicians despaired of its usefulness. Further experience has shown that these failures were due almost entirely to insufficient doses of penicillin. The experience of Hunter¹³ permitted him to state that "the great majority of patients who have streptococcal endocarditis can be cured with sufficiently intensive administration of penicillin."

Early diagnosis is essential. The disease should be suspected in any patient with valvular heart disease who has unexplained fever for a week or more or who exhibits embolic phenomena, splenomegaly or unexplained anemia.

It is useful to establish the sensitivity of the infecting organism to penicillin *in vitro*, and in general the dose of penicillin given should be sufficient to maintain a concentration in the blood four or five times that required for inhibition of the infecting organism *in vitro*. While a dose of 400,000 to 1,000,000 units of penicillin daily will suffice in an average case, in the presence of a highly resistant strain or of relapses after

treatment, doses up to 20,000,000 units daily may be required to effect a cure.

No rule can be laid down regarding the length of time treatment must be continued, for it varies with the conditions encountered in each patient. It is seldom wise to discontinue treatment in less than three weeks. Hunter¹³ advised that treatment be stopped at the end of two to three weeks. A blood culture is then made; if this is negative, treatment is not resumed. He found that even though such a patient continues to have fever, leukocytosis, an increased sedimentation rate and embolic phenomena, it frequently turns out that a cure results without further treatment with penicillin. Such an interruption to test the question of a cure may shorten a laborious and uncomfortable treatment that otherwise might have been prolonged unnecessarily.

It is well recognized that a patient who has valvular heart disease can acquire subacute bacterial endocarditis after the extraction of a tooth and possibly after tonsillectomy. Such patients should always be protected by prophylactic treatment with penicillin. The administration of 100,000 units of penicillin every three hours for a day preceding and two days following such surgical procedures should suffice as a prophylactic measure.

ANTICOAGULANT THERAPY

Thromboembolism is a common and serious complication among patients suffering from heart failure or from acute coronary occlusion. Nay and I¹⁴ studied the condition of 100 patients during their immediate convalescence from acute myocardial infarction. Thrombotic or embolic complications were observed in 37 cases. In 4 cases such complications were the cause of death, and in 8 they contributed importantly to death. These complicating episodes included a second myocardial infarction (15 cases), pulmonary embolism (14 cases) and cerebrovascular accidents (8 cases).

Preliminary experience¹⁵ indicates that the routine administration of "dicumarol" to patients who have had an acute myocardial infarction greatly diminishes the incidence of thromboembolic episodes and promises to reduce materially the mortality rate of this condition.

The frequency with which embolism and pulmonary infarction complicate the treatment of heart failure is too well known to deserve comment. Since it is conceded generally that these emboli arise from thrombi in the veins of the legs, one group of investigators advocates ligation of the femoral or iliac veins if nonfatal pulmonary embolism has occurred. My colleagues and I have felt that we secured equally satisfactory results by treating these patients with "dicumarol." We feel that the bilateral ligation of large veins in the lower extremities is not wholly innocuous in its ultimate effects.

Pulmonary embolism occurring in medical and surgical cases ordinarily is not primarily a cardiac problem. Nevertheless, the ultimate survival of a patient who has had an attack of pulmonary embolism depends on the capacity of the heart to withstand the circulatory dis-

11. Grollman, A.: Sodium Restriction as a Dietary Measure in Hypertension, *J. Am. Dietet. A.* 22:864-866 (Oct.) 1946.
12. Grollman, A.; Harrison, T. R.; Mason, M. F.; Baxter, J.; Cramp-ton, J., and Reichman, F.: Sodium Restriction in the Diet for Hypertension, *J. A. M. A.* 129:533-537 (Oct. 20) 1945.
13. Hunter, T. H.: Treatment of Subacute Bacterial Endocarditis, *Mod. Conc. Cardiovasc. Dis.*, August 1946, vol. 15.

14. Nay, R. M., and Barnes, A. R.: Incidence of Embolic or Thrombotic Processes During the Immediate Convalescence from Acute Myocardial Infarction, *Am. Heart J.* 30:65-76 (July) 1945.
15. Peters, H. R.; Guyther, J. R., and Bramble, C. E.: Dicumarol in Acute Coronary Thrombosis, *J. A. M. A.* 130:398-403 (Feb. 16) 1946.
Nichol, E. S., and Page, S. W., Jr.: Dicumarol Therapy in Acute Coronary Thrombosis: Results in Fifty Attacks, with Review of Data on Embolic Complications and Immediate Mortality in Myocardial Infarction, *J. Florida M. A.* 32:365-370 (Jan.) 1946. Wright, I. S.: Experiences with Dicumarol (3,3'-Methylene-bis-[4-Hydroxycoumarin]) in the Treatment of Coronary Thrombosis with Myocardial Infarction: Preliminary Report, *Am. Heart J.* 32:20-31 (July) 1946.

turbances associated with this event. If a patient has an attack of pulmonary embolism after surgical treatment and survives for a few hours, he has a 44 per cent chance of having a subsequent thromboembolic episode and an 18 per cent chance of having a subsequent fatal embolism.¹⁶ If treatment with heparin and "dicumarol" is started immediately after the episode and is administered properly, it has been shown that subsequent thromboembolic episodes can be prevented almost entirely.¹⁷ If a patient gives a history of previous thrombophlebitis or pulmonary embolism, it is feasible to preclude almost all such occurrences after surgical treatment by starting "dicumarol" therapy on the third day after operation.

A successful dosage for "dicumarol," as employed at the Mayo Clinic, is as follows: The dose for the first day is 300 mg. On each subsequent day when the prothrombin is greater than 20 per cent of normal prothrombin, 200 mg. of "dicumarol" is given. On days when the prothrombin is less than 20 per cent of normal, no "dicumarol" is given. If the prothrombin drops below 10 per cent of normal during the first few days of treatment and remains there for two days, 20 to 30 mg. of menadione bisulfite is given intravenously, and thereafter only 100 mg. of "dicumarol" is given to that patient on those days on which the prothrombin is greater than 20 per cent of normal.¹⁸

"Dicumarol" cannot be administered safely unless its dosage is controlled by daily determination of the prothrombin time expressed in percentage of normal concentration of prothrombin. If serious bleeding occurs during the administration of "dicumarol," a transfusion of fresh citrated blood should be given. At the same time, 60 mg. of menadione bisulfite should be given intravenously and this dose should be repeated once or twice daily until bleeding ceases.

"Dicumarol" is contraindicated in the presence of purpura, subacute bacterial endocarditis, renal and hepatic insufficiency or for patients who recently have had an operation on the brain and spinal cord. It should not be administered in the presence of ulcerative lesions, such as ulcerative colitis.

THE SURGICAL TREATMENT OF HEART DISEASE

Patent Ductus Arteriosus.—Patent ductus arteriosus is characterized by an absence of cyanosis, a continuous murmur over the pulmonic area and roentgenographic evidence of enlargement of the pulmonary conus. The presence of a distolic murmur over the pulmonic area is almost essential if the diagnosis is to be established by ordinary clinical methods. If any doubt obtains about the diastolic murmur, its presence or its absence may be established if a phonocardiogram can be obtained. A thrill is present over the point of greatest intensity of the murmur in 75 to 80 per cent of the cases. The pulse pressure is increased above the normal of 30 to 45 mm. of mercury. Since both right and left ventricles are subject to strain and since hypertrophy of both is common, the electrocardiogram reveals no axis deviation or only slight deviation. Pronounced right axis deviation points to some other source of predominant right ventricular hypertrophy.

The indications for surgical closure of patent ductus arteriosus are (1) stunted growth, (2) an enlarging heart or symptoms of increasing dyspnea or both and (3) the presence of subacute bacterial endocarditis. Shapiro¹⁸ urged that patients who have infected ducts should undergo early operation without waiting for a possible cure of the infection by penicillin.

Opinions differ concerning surgical intervention in cases in which the diastolic pressure is normal or only slightly reduced, in which there is little or no cardiac hypertrophy and in which there are no peripheral signs of edema. However, Keys and Shapiro¹⁹ have estimated that the life expectancy of males is reduced by about twenty-three years and that of females by about twenty-eight years if a patent ductus arteriosus remains untreated. Since the mortality rate for surgical closure of patent ductus arteriosus is 5 per cent or less, Shapiro¹⁸ is of the opinion that all children should undergo this operation as soon as the diagnosis is established regardless of apparent disability or signs of disruption of the cardiac function.

Whenever possible, section of the patent ductus arteriosus rather than ligation is the most effective as well as the most practical procedure.

Coarctation of the Aorta.—The prognosis of the adult type of coarctation of the aorta has been studied by Reifstein, Levine and Gross.²⁰ They found one group of cases in which the patients had attained elderly life, had only minor complaints and had had a reasonably satisfactory life. The patients in the second group succumbed to a superimposed subacute bacterial infection. In a third group, sudden death occurred from rupture of the aorta. In a fourth group, death occurred from cardiac decompensation or from intracranial hemorrhage. In general, they found that although some persons enjoy a long life, the prognosis usually is poor for survival beyond the ages of 25 to 30 years.

Gross²¹ in this country and Crafoord²² in Sweden have demonstrated the feasibility of the surgical treatment of coarctation of the aorta. Gross has operated on 14 patients for this condition, with 2 deaths. In 1 a satisfactory anastomosis could not be obtained, but the patient survived the operation without any significant change in his hypertensive state. In the remaining 11 cases the results of the operation were satisfactory: Normal pulsations and pressures were restored in the arteries of the legs, and hypertension in the upper part of the body was relieved completely.

Gross considered that "the optimal ages for performance of this operation lie between 6 and 20 years." Beyond the age of 25 years arteriosclerosis "makes the aorta a poor vessel for manipulation and suture." It is obvious that the early identification of coarctation of the aorta offers the patient the best chance for surgical treatment, and hence for survival.

Congenital Pulmonic Stenosis.—In May 1945, Blalock and Taussig,²³ in an epochal report, described the first successful operation for the relief of pulmonary

16. Barker, N. W.: Anticoagulant Therapy, *Mod. Conc. Cardiovasc. Dis.*, November 1946, vol. 15.

17. Allen, E. V.: The Clinical Use of Anticoagulants: Report of Treatment with Dicumarol in 1,686 Postoperative Cases, *J. A. M. A.* 134: 323-329 (May 24) 1947.

18. Shapiro, M. J.: Recent Advances in Surgical Treatment of Patent Ductus Arteriosus, *Mod. Conc. Cardiovasc. Dis.*, January 1947, vol. 16.

19. Keys, A., and Shapiro, M. J.: Patency of the Ductus Arteriosus in Adults, *Am. Heart J.* 25: 158-186 (Feb.) 1943.

20. Reifstein, G. H.; Levine, S. A., and Gross, R. E.: Coarctation of Aorta: A Review of One Hundred Four Autopsied Cases of the 'Adult' Type, Two Years of Age or Older, *Am. Heart J.*, to be published.

21. Gross, R. E.: Technical Considerations in Surgical Therapy for Coarctation of the Aorta, *Surgery* 20: 1-8 (July) 1946.

22. Crafoord, C., and Nylén, G.: Congenital Coarctation of Aorta and Its Surgical Treatment, *J. Thoracic Surg.* 14: 347-361 (Oct.) 1945.

23. Blalock, A., and Taussig, H. B.: The Surgical Treatment of Malformations of the Heart in Which There Is Pulmonary Stenosis or Pulmonary Atresia, *J. A. M. A.* 128: 189-202 (May 19) 1945.

stenosis. They stated that the operation was indicated in cases of congenital cardiac lesions producing cyanosis when there was clinical and roentgenographic evidence of an inadequate flow of blood through the lungs. The evidence for this rests on "the absence of visible pulsations in the lung fields as observed under the fluoroscope and roentgenographic evidence that the pulmonary artery is small in size."²³ When a patient is of sufficient age so that catheterization of the heart by the venous route is feasible, this procedure may yield information which not only confirms the diagnosis, but also is a means of determining the volume of the pulmonary blood flow. In any event, if the diagnosis is doubtful in the case of a child who has decided cyanosis and if the prognosis for the patient is considered hopeless, Blalock and Taussig have considered that exploration is justified. When the pulmonary artery is exposed, the pressure in the artery can be measured by a water manometer attached to a needle which is inserted into the pulmonary artery. These observers considered operation inadvisable if the pressure in the pulmonary artery is more than 300 mm. of water.

Blalock and Taussig have reported that the operation is beneficial in (1) tetralogy of Fallot, (2) pulmonary atresia with or without dextroposition of the aorta and with or without defective development of the right ventricle, (3) truncus arteriosus with bronchial arteries and (4) a single ventricle with a rudimentary outlet chamber with which the pulmonary artery is diminutive in size.

Blalock²⁴ has reported operation on 110 patients for congenital pulmonic stenosis with an over-all mortality rate of 23 per cent. In some of these cases the operation consisted of exploration and anastomosis was not performed.

The operation results in a decrease of cyanosis, and clubbing of the fingers and toes diminishes after a period. The tolerance of the children to exercise is increased greatly after operation, and some then can engage in fairly strenuous exercise.

ABSTRACT OF DISCUSSION

TREATMENT OF HYPERTENSION

QUESTION: Is the surgical treatment of hypertension the most satisfactory way of treating this disease?

ANSWER: Not necessarily. The selection of the method of treating a patient with hypertension must rest on the careful analysis of the individual case. This study must include an attempt to discover the cause of hypertension. If coarctation of the aorta is discovered, surgical treatment of that condition is in order. If a unilateral functionless kidney is found, its removal may relieve the hypertension. If the hypertension is found to be associated with chronic nephritis, sympathectomy is unwarranted. Sympathectomy for hypertension beyond the age of 55 years is of limited or questionable value. Hypertension in young patients should be followed for some time to determine whether it is periodic in occurrence or shows a tendency to be progressive in its severity. Sympathectomy is probably indicated in the latter case but is of doubtful value in the former. The indications for sympathectomy are clearest in patients less than 50 years of age who have severe hypertension and in whom cerebral vascular accidents have not occurred, who have not had heart failure in association with pronounced cardiac hypertrophy and in whom serious renal damage has not occurred. An additional indication for operation in these cases is the occurrence of severe headaches.

GLYCOSIDES OF DIGITALIS

QUESTION: Are the purified glycosides of digitalis more useful than the powdered leaf in the treatment of heart disease?

ANSWER: One of the purified glycosides of digitalis, digitoxin, has two chief advantages. The first advantage is that a full digitalizing dose of this preparation may be given by mouth at one time with minimal prospects of producing nausea and vomiting, and the second is that by virtue of the fact that digitoxin is absorbed 100 per cent in the gastrointestinal tract, it is easier to predict the amount of the drug that must be given by mouth to produce a full effect of digitalis. However, it must be recognized that there is considerable individual variation in the amount of the drug required to produce the desired effect. The purified glycoside lanatoside C has the disadvantage that only about a tenth of the orally administered dose is absorbed in the gastrointestinal tract. Nausea and vomiting are somewhat less commonly observed in patients adequately treated with purified glycosides of digitalis than when a similar effect of digitalis is obtained by the use of a preparation of the powdered leaf.

LOW SODIUM DIET

QUESTION (Dr. Maurice D. Krauss, Brooklyn): Is there any value in a low sodium diet in compensated valvular disease?

ANSWER: A low sodium diet is indicated in a patient with compensated valvular disease of the heart who has suffered from previous cardiac decompensation. If the patient has had no such episode of cardiac decompensation, one is not warranted in subjecting him to the inconvenience of a low sodium diet.

CORONARY THROMBOSIS

QUESTION (Dr. O. P. J. Falk, St. Louis): Do you feel that heparin should be added to "dicumarol" therapy in coronary thrombosis?

ANSWER: No. If a dose of 300 mg. of "dicumarol" is given immediately after acute coronary thrombosis, an adequate effect on the coagulability of the blood will be obtained in forty-eight to seventy-two hours. Thromboembolic episodes are extremely unlikely to occur in the first two or three days after acute coronary occlusion.

DOSAGE OF HEPARIN AND "DICUMAROL"

QUESTION (Dr. H. S. Connamacher, Newark, N. J.): What doses and what frequency do you use with heparin and "dicumarol"?

ANSWER: Heparin is given intravenously by two methods. 1. It may be given by a continuous drip method starting at 25 drops per minute and varying the rate of injection so that the coagulation time of venous blood is kept between fifteen and twenty-five minutes. The intravenous solution is made by adding 100 to 200 mg. of heparin to 1,000 cc. of a diluent, either a 0.9 per cent solution of sodium chloride or a 5 per cent solution of dextrose. 2. A concentrated solution of heparin of either 5 cc. (50 mg. of heparin) given every four hours or 10 cc. (100 mg. of heparin) given every six hours may be administered intravenously. With this latter method the coagulation time is not followed, and despite the fact that the coagulation time returns to normal between injections, the method seems to be effective. Heparin may be given subcutaneously or intravenously in the Pitkin menstrium every two or three days (Loewe, L., and Rosenblatt, P.: A New Practical Method for Subcutaneous Administration of Heparin; Preliminary Report. *Am. J. M. Sc.* 208:54-63 [July] 1944. Barker employs the following dosage schedule for "dicumarol" at the Mayo Clinic: The entire amount for one day is given in a single dose. The first dose is 300 mg. On each subsequent day when the prothrombin is greater than 20 per cent of normal prothrombin, 200 mg. of "dicumarol" is given. On days when the prothrombin is less than 20 per cent of normal, no "dicumarol" is given. If the prothrombin drops below 10 per cent of normal during the first few days, 20 to 30 mg. of menadione bisulfite is given intravenously, and thereafter only 100 mg. of "dicumarol" is given to that patient on those days on which the prothrombin is greater than 20 per cent of normal. With this schedule, prothrombin deficiency has been maintained for as long as six months without untoward or toxic effect on

24. Blalock, A.: The Surgical Treatment of Congenital Pulmonic Stenosis, *Ann. Surg.* 124: 879-887 (Nov.) 1946.

the patient and with return of prothrombin to normal within a few days after administration of "dicumarol" finally was discontinued.

WILSON'S UNIPOLAR LEAD

QUESTION (Dr. Peter Pileggi, Bridgeport, Conn.): Please say a few words on the value of Wilson's unipolar lead, especially in the diagnosis of cases of acute coronary thrombosis when other leads are negative?

ANSWER: This question does not relate to treatment and cannot be discussed in the limited scope afforded for answers to these questions.

TREATMENT OF RHEUMATIC HEART DISEASE

QUESTION: Are there effective methods of treating and preventing rheumatic heart disease?

ANSWER: Yes, with certain limitations. 1. In treatment of an acute attack of rheumatic fever salicylates should be administered in large doses by mouth to lower the fever, control pain and reduce the sedimentation rate, but this does not constitute a cure of the disease. The patient should be kept at rest in bed until evidences of activity of the rheumatic fever process have disappeared. Beyond this, activity may be gradually resumed, but it is important to isolate the patient for several months from contacts which might allow him to acquire an acute infection of the respiratory tract. 2. In a child that has had one or more attacks of rheumatic fever, the daily administration of sulfadiazine, except possibly during the summer months, seems definitely to diminish the likelihood of his having a recurrence of rheumatic fever. Improvement of the environment, including adequate housing, clothing and food, and the avoidance of excessive fatigue in the succeeding preadult years add greatly to the protection that can be afforded against recurrent attacks of rheumatic fever. Children who have had rheumatic fever are better protected from recurrences by residence in a warm climate. Their hazard is increased by residence in children's homes or in large families where the chance of acquiring acute infections of the respiratory tract is greatly increased.

USE OF HEPARIN

QUESTION: Has the use of heparin in subacute bacterial endocarditis any value?

ANSWER: It is the consensus that it has no use in this condition. In my personal experience, the use of heparin in the treatment of subacute bacterial endocarditis has led to serious complications.

USE OF THIOURACIL

QUESTION (Dr. Benjamin Miller, Baltimore): Please discuss the use of isopropyl thiouracil in heart disease; that is, cases that are not directly thyrotoxic in etiology.

ANSWER: The usefulness of isopropyl thiouracil in the treatment of heart disease is predicated on its function of reducing the basal metabolic rate. The care that must be exercised to be certain that neutropenia does not result, and the untoward general effects produced if very low basal rates are reached, greatly reduce its usefulness for practical purposes. The result of its use in the treatment of heart disease to date is not sufficiently demonstrated to warrant its general use for this purpose.

MERCURIAL DIURETICS

QUESTION (Dr. H. W. Stevens, Middleboro, Mass.): What benefits can be effected by mercurial diuretics that are not possible by careful control of sodium intake and other control of diet and activity?

ANSWER: Most cases of heart failure are controlled by a low sodium intake, the judicious use of digitalis preparations and control of the patient's activity. However, practical experience has shown that in spite of these measures, edema in some cases can be controlled only by the periodic administration of mercurial diuretics.

SODIUM PENICILLIN

QUESTION (Dr. Edward R. Barber, Lancaster, S. C.): Is the sodium in sodium penicillin present in sufficient amounts to cause harm in a patient with congestive heart failure and to warrant the use of another type of penicillin?

ANSWER: The amount of sodium in sodium penicillin is so small as scarcely to be a factor in the production of edema when administered to a patient with congestive heart failure. If there were any question, the penicillin could be given as calcium penicillin, which is the form in which I administer most of the penicillin given under my supervision.

USE OF POTASSIUM CHLORIDE

QUESTION (Dr. Glen Pincock, Washington, D. C.): In cardiac decompensation is the substitution of potassium chloride as "salt" in place of sodium chloride advisable?

ANSWER: In cardiac decompensation potassium chloride may be substituted as "salt" for sodium chloride if the patient finds it renders his food more palatable.

USE OF THIOCYANATES

QUESTION: How safe are thiocyanates for use by general practitioners?

ANSWER: Thiocyanates can be used most safely only if their dosage is controlled by periodic determinations of the levels of the cyanates in the blood. If a patient has been followed over a sufficient period of time with determination of levels of the cyanates in the blood and if a safe dosage level has been established, he usually may continue that dose under the direction of his home physician. Even then, the patient should be instructed to report to his physician if a cutaneous rash or gastrointestinal symptoms appear. Most patients will tolerate a dose of 6 grains (0.4 Gm.) of potassium thiocyanate daily without the risk of untoward symptoms, but often that dose does not produce blood levels sufficiently high to be very useful in the treatment of hypertension. Physicians should also be aware that the thiocyanates may produce myxedema and should be alert for signs of its development.

ANTICOAGULANTS

QUESTION (Dr. Paul A. Sica, Pittsburgh: Are you routinely using anticoagulants in all your cases of acute myocardial infarction?

ANSWER: Yes.

QUESTION (Dr. E. P. Bray, Richmond, Va.): In acute myocardial infarction when and how would one start anticoagulant therapy?

ANSWER: See answers to the fourth and fifth questions.

HYPERTENSIVE ENCEPHALOPATHY

QUESTION: Please discuss the use of hypertonic sugar solution and magnesium sulfate in hypertensive encephalopathy. Please discuss the changes in blood lipids which are responsible for the appearance of lipemia retinalis and xanthoma diabeticorum.

ANSWER: This is too much to attempt to answer in the scope allowed for answers to such questions.

SYPHILITIC ANEURYSM

QUESTION (Dr. R. Weyher, Detroit): Is penicillin therapy justified in an early thoracic syphilitic aneurysm with mild cardiac failure?

ANSWER: In general the answer is no. There are reports of deaths due to Herxheimer reactions in patients treated with large doses of penicillin for syphilis of the aorta. If penicillin is used in such a situation, great care should be taken and small doses of penicillin employed over a long period of time. One could not expect improvement in the aneurysm. The cardiac failure would have to be treated by the usual measures employed in treating such a condition if it were of nonsyphilitic origin.

IDIOSYNCRASY TO QUINIDINE

QUESTION (Dr. A. Alexander Bernstein, Scranton, Pa.): When patients show an idiosyncrasy to quinidine, in auricular fibrillation, what do you use?

ANSWER: I have little to offer anybody who is permanently sensitive to quinidine, but I would remind the man who asked this question that by stopping quinidine it may be possible to resume its use later and have the patient take it successfully.

RECENT ADVANCES IN TREATMENT
OF CANCER

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The pattern of recent advances in the treatment of cancer differs somewhat from that of the past. It represents, perhaps, an indication of a new trend, long foreseen, toward more radical surgery on the one hand and toward new biochemical approaches on the other. This denotes a strengthening of the position of surgery as a curative agent, coincidentally with an intensified search for new means of palliation and control.

The procedure devised by Mohs,¹ entitled "Chemosurgical Treatment of Cancer," has recently been the subject of a review of five year end results of its application to neoplasms of the ear. The method is beyond question an interesting one and deserving of careful consideration. Of 19 patients with squamous cell carcinoma treated, 9 are well after five years. It is unfortunate that no figure is given for the five year salvage in cases of disease recurrent after efforts at therapy by other means. It is stated that 53 per cent of patients with recurrent disease were successfully treated, but the duration of the success is not specified. The same objection can be raised to the figures reported for the treatment of basal cell carcinoma. Here 81 per cent of five year cures are reported, but no duration for the 76 per cent cures of recurrent disease. The cure rates for skin cancer adequately treated by conventional surgical or radiologic means are, of course, exceedingly high also.

CANCER OF THE UPPER RESPIRATORY TRACT

Nowhere is the drift toward more radical surgery seen more clearly than in the treatment of neoplasms of the oral cavity and the upper respiratory tract. Unfortunately cancer of the mouth and associated structures varies greatly in prognosis according to site. As a result statistical proof of the value of the extensive surgery now practiced is not yet at hand. Sufficient evidence is available, however, to suggest that much oral disease, now frequently classified as suitable for only palliative care, is actually susceptible of cure if bold measures are undertaken by competent operators.

The question of the most effective treatment of laryngeal cancer is still debated in some circles. A review of the results of radiation therapy of cancer of the larynx has recently been published by Lenz.² Of 110 patients studied, 30 are reported to be free of disease for periods of over five years. He recommends roentgen therapy for all cancers of the vocal cord except when disease has extended subglottally or into the arytenoid cartilage. This conclusion is based on 8 survivals of 10 patients treated. The report of Cutler³ suggests that a five year cure rate of 60 per cent, as high

as the one seen after surgery, can be obtained by the use of roentgen rays alone in patients who would normally have been subjected to laryngectomy. The experience on which this opinion is based, however, seems to be limited to a total of 10 patients, as far as can be concluded from the published data. In a more recent report⁴ 18 five year cures, or 42 per cent of 47 patients treated, are reported. There can be no doubt whatever that certain patients with laryngeal disease are and should be cured by roentgen irradiation. The loss of voice and the hazard associated with the surgical removal of the larynx have been in the past serious deterrents to operative intervention in general. Modern technics for the development of the esophageal voice and the ability of Martin and his associates⁵ to perform one hundred and ninety-three total laryngectomies for cancer with only 3 operative fatalities (1½ per cent), including a series of 102 consecutive cases without any postoperative death, and a cure rate of about 60 per cent in 44 cases in which operation had been performed more than five years previously, have altered the situation. It is hard to conceive of diagnostic criteria and acumen so accurate as to make possible a uniformly reliable decision as to whether a given example of laryngeal cancer is capable of being cured by roentgen irradiation. On the basis of the facts now available, surgery undoubtedly sacrifices some larynxes which could have been saved by radiation therapy. Surgical intervention probably saves 50 per cent more lives, however, a significant number, and many prefer their lives to their larynxes.

CANCER OF THE BREAST

The treatment of cancer of the breast remains surgical as far as cure is concerned. The procedures employed are so standardized as to be hardly worth comment. One set of facts deserves attention, however. In one clinic amputating, without skin graft, more than five hundred breasts annually for cancer, the five year cure rate for all patients found to have involvement of axillary lymph nodes is 46 per cent, the postoperative mortality 0.2 per cent and the incidence of local skin recurrence not over 19 per cent. These figures indicate that the exceedingly radical procedure frequently advocated for all amputations of the breast for cancer is not always required. They fail to support the feeling of some that no true, wholly autonomous cancer is ever cured.

The palliative care of patients with metastatic disease of the breast provides an interesting and important development. Here hormone therapy clearly is irregularly and transiently effective. The early reports of Fels⁶ and of Loeser⁷ have been supported by the observations published recently by Adair and Herrmann.⁸ The administration of testosterone propionate in doses adequate to cause masculinization brings about irregularly demonstrable calcification of previously decalcified areas of mammary cancer metastatic to bone. This

Read in a Panel Discussion on Recent Advances in Treatment before the joint meeting of the Section on Internal Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

1. Mohs, F. E.: Chemosurgical Treatment of Cancer of the Ear: A Microscopically Controlled Method of Excision, *Surgery* 21: 605, 1947.

2. Lenz, M.: Cancer of the Larynx, *J. A. M. A.* 134: 117 (May 10) 1947.

3. Cutler, M., in Report of the Chicago Tumor Institute, April 1, 1938 to March 31, 1945.

4. Cutler, M.: Cancer of Larynx: Five-Year Results of Concentration Radiotherapy, *Arch. Otolaryng.* 43: 300 (April) 1946.

5. Martin, H.: Cancer of the Larynx, in Nelson's Loose Leaf Surgery, New York, Thos. Nelson & Sons, 1947.

6. Fels, E. J.: Treatment of Breast Cancer with Testosterone Propionate, *J. Clin. Endocrinol.* 4: 121, 1944.

7. Loeser, A. A.: Mammary Carcinoma Response to Implantation of Male Hormone and Progesterone, *Lancet* 2: 698, 1941.

8. Adair, F. E., and Herrmann, J. B.: The Use of Testosterone Propionate in the Treatment of Advanced Carcinoma of the Breast, *Ann. Surg.* 123: 1023, 1946.

seems to occur in over 15 per cent of the patients treated and to be of variable duration. Subjective improvement, indicated by gain in weight and relief of pain, can be striking. Certain patients are encountered, however, as first described by Farrow and Woodard,⁹ whose blood calcium levels are somewhat elevated before treatment is begun, in whom profound and possibly dangerous hypercalcemia follows administration of testosterone. In these persons pain may be relieved coincidentally with a rapid and extensive spread of the metastatic neoplasm.

The use of estrogenically active substances, particularly diethylstilbestrol, in the treatment of metastatic cancer of the breast was initially described in England.¹⁰ It has been explored further in this country, particularly by Nathanson.¹¹ The beneficial effects are seen principally when soft tissues are involved. This contrasts sharply with the results of testosterone therapy, which are almost entirely seen in metastases to bone. The incidence of improvement of soft tissue lesions is about the same (15 per cent) as the improvement of osseous lesions after testosterone therapy. Similar complications may occur, and improvement is equally transient.

The review by Halberstaedter¹² of the effects of oophorectomy on patients with metastatic disease of the breast deserves to be consulted. It is an odd fact that this procedure, so often reestablished as useful, continues to need defense.

ABDOMINAL CANCER

The radical surgery of abdominal cancer has been the subject of a major contribution by Brunschwig.¹³ This surgeon reports the results of one hundred very extensive operative procedures. The patients had cancer which had extended locally to invade organs other than the one primarily involved. Fifty per cent of the patients were early fatalities or received no palliative benefit; 37 per cent returned to their usual occupations only for periods of from weeks to months, and 13 per cent have been free of disease for two to ten years. The policy adopted by Brunschwig of attempting, at least, the removal of locally invasive disease, inoperable by ordinary standards, has been criticized on the score of practically every criterion of culpability. The logic in these criticisms is hard to ascertain. The cure rate obtained, 13 per cent, is as high as that for all patients treated for rectal cancer in the state of Connecticut,¹⁴ higher than the cure rates for neoplastic disease of lung, stomach, bone and bladder. There can, indeed, be no logical argument against the use of heroic measures to save life. The 13 patients salvaged of the 100 treated certainly represent pure gain. They are willing, I feel sure, to pay tribute to the determination, vision and technical ability of the surgeon.

9. Farrow, J. H., and Woodard, H. Q.: The Influence of Androgenic and Estrogenic Substances on the Serum Calcium in Cases of Skeletal Metastases from Mammary Cancer. *J. A. M. A.* **118**:339 (Jan. 31) 1942.

10. Haddow, A.; Watkinson, J. M., and Paterson, E.: Influence of Synthetic Oestrogens upon Advanced Malignant Disease. *Brit. M. J.* **2**: 393, 1944.

11. Nathanson, I. T.: The Effect of Stilbestrol on Advanced Cancer of the Breast. *Cancer Research* **6**:484, 1946.

12. Halberstaedter, L., and Hochman, A.: The Artificial Menopause and Cancer of the Breast. *J. A. M. A.* **131**:810 (July 6) 1946.

13. Brunschwig, A.: Radical Surgery in Advanced Abdominal Cancer. Chicago, University of Chicago Press, 1947.

14. Oppenheimer, E.: Carcinoma of the Rectum in Connecticut, New England *J. Med.*, to be published.

CANCER OF THE THYROID GLAND

The treatment of cancer of the thyroid gland by radioactive iodine is a possibility which has been hailed with great enthusiasm by those who deal with the manufacture of atomic bombs, because of the humane application of the by-products. The primary observations of Hamilton¹⁵ and of Frantz¹⁶ that radioactive iodine was stored in several of a large number of metastatic nodules of a primary thyroid adenocarcinoma has led to further studies. Seidlin, Marinelli and Oshry¹⁷ have reported on the treatment with radioactive iodine of an extraordinary patient. This person had hyperthyroidism from functioning metastases of thyroid adenocarcinoma. The normal thyroid had been wholly removed and there was no uptake of radioactive iodine by the tissue of the neck. Thyroxin iodine was demonstrated in the metastases and thiouracil produced a complete remission of the hyperthyroidism. This recurred when the drug was withdrawn. Therapy with I¹³¹ has controlled not only the hyperthyroidism but also the cancer for over four years.

Particularly pertinent to the problem of treatment of thyroid cancer is the study of Marinelli, Foote, Hill and Hocker.¹⁸ An effort was made to correlate the pick-up of radioactive iodine with the histologic type of thyroid neoplasms. Detectable deposition of radioactive iodine was found in only about 15 per cent of thyroid cancers. As might have been expected, deposition of iodine was greatest in metastasizing struma and least in the more anaplastic types of solid carcinoma. It is to be hoped that some procedure can be devised for increasing the uptake of iodine by the less differentiated tumors of the thyroid. If this is not done, therapeutic successes are likely to be few.

CANCER OF THE BLADDER

The recent communications of Jewett¹⁹ and of Marshall²⁰ concerning cancer of the bladder merit particular attention. Jewett in a careful study proved that in about 25 per cent of patients whose cancer of the bladder has infiltrated the muscular wall there is no extension into adjacent structures. Marshall reported a post-operative mortality for ureteral transplantation and total cystectomy of approximately 10 per cent and a five year cure rate for cancer of the bladder treated by radiation of 6 per cent. From these facts it appears likely that the more extensive use of total cystectomy in the future should result in a significant improvement in rate of cure, since the disease of many patients in the group reported by Jewett should be susceptible to control by surgery.

THE NITROGEN MUSTARDS

The most noteworthy advance in the treatment of neoplastic disease during 1946 has been in the use of the nitrogen mustards. From the days of World

15. Hamilton, J. G.; Soley, M. H., and Eichorn, K. B.: Deposition of Radioactive Iodine in Human Thyroid Tissue. *Univ. of California Publ., Pharmacol.* **1**: 339-368, 1940.

16. Frantz, V. K.; Ball, R. P.; Keston, A. S., and Palmer, W. W.: Thyroid Carcinoma with Metastases Studied with Radioactive Iodine. *Ann. Surg.* **110**: 668, 1944.

17. Seidlin, S. M.; Marinelli, L. D., and Oshry, E.: Radioactive Iodine Therapy: Effect on Functioning Metastases of Adenocarcinoma of the Thyroid. *J. A. M. A.* **132**: 838 (Dec. 7) 1946.

18. Marinelli, L. D.; Foote, F. W.; Hill, R. F., and Hocker, A. F.: To be published.

19. Jewett, H. J.: Infiltrating Carcinoma of the Bladder: Application of Pathologic Observations to Clinical Diagnosis and Prognosis. *J. A. M. A.* **134**: 496-500 (June 7) 1947.

20. Marshall, V. F.: A Comparison of Radiation and Surgery for Cancer of the Bladder. *J. A. M. A.* **134**: 501-507 (June 7) 1947.

War I it has been known that mustard gas injures hemopoietic tissue. Studies of chemical warfare agents jointly by Army and Office of Scientific Research and Development contractors confirmed the fact and extended knowledge of the details. Gilman,²¹ while a contractor working under military secrecy, was the first to apply the mass of new pharmacologic knowledge to the treatment of a patient with lymphosarcoma. Later Jacobson,²² also on a war research contract, extended the observation and found particularly good effects in Hodgkin's disease. In 1914 the most promising nitrogen mustard, commonly termed HN₂, was made available by the Office of Scientific Research and Development to the National Research Council for distribution to three representative institutions for the treatment of patients. A summary of the results obtained appeared in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.²³ During the past year it has been available on request to institutions qualified under the rulings of the Food and Drug Administration. Over five thousand treatment units have been distributed to one hundred and twenty-six institutions and over one thousand one hundred clinical reports have been received. Of these about 60 per cent provide data suitable for analysis. The study has been supervised by a representative of the Committee on Growth of the National Research Council, Dr. David Karnofsky. The results can be summarized as follows, though exceedingly incomplete:

1. Hodgkin's disease. About 70 per cent of the patients with Hodgkin's disease show objective improvement and about 90 per cent subjective response. Remissions last about one month in most instances, but may rarely endure as long as six months. Responses can be obtained to subsequent courses of treatment.

2. Myeloid leukemia. Full remissions can be induced in early and moderately advanced stages of myeloid leukemia. These remissions are of the type which results from roentgen irradiation but tend to be of shorter duration.

3. Lymphosarcoma and lymphatic leukemia. Improvement in cases of lymphosarcoma and lymphatic leukemia can be obtained but tends to be of limited degree and transient. Severe toxic reactions of the hemopoietic system are common and the use of the drug is not recommended.

4. Acute leukemia seems not to be influenced favorably in its course.

5. Cancer of the gastrointestinal tract, oral cavity, breast and genitourinary systems is not inhibited.

6. Cancer of the lung can be caused to regress temporarily in about 50 per cent of the instances. The effects are transient and incomplete.

7. Melanoma and tumors of the central nervous system may possibly respond to some extent. More information is needed.

The advances described and recently reported are not events of 1946 alone. They represent the accumulated force of the experience of a considerable period. They,

coupled with new mechanisms for early diagnosis and mass examination, have already lessened the age-adjusted death rate from cancer. The intense public resolution to be rid of the threat of this grave disorder bids fair to provide rapid progress in the future.

ABSTRACT OF DISCUSSION

HODGKIN'S DISEASE

QUESTION (Dr. Robert D. Redston, New York): Has it been observed that cases of Hodgkin's disease progress more rapidly toward termination after treatment with nitrogen mustard and a remission of variable duration?

ANSWER: From the survey which has been made under the auspices of the National Research Council there is no reason to believe that Hodgkin's disease progresses more rapidly toward termination after nitrogen mustard therapy, followed by remission.

CANCER OF PROSTATE

QUESTION: What is the most effective chemical treatment of carcinoma of the prostate?

ANSWER: Adequate data are not at hand to answer this question. There is no doubt whatever that diethylstilbestrol or its derivatives have a distinct though temporary clinical effect. It is commonly supposed that the effect is due to the estrogenic potency of the chemical used.

ESTROGENS AND CANCER OF BREAST

QUESTION: Is there danger in producing cancer of the breast with the use of estrogenic substances?

ANSWER: I know of no danger of producing cancer of the breast by the administration of estrogenic substances. A very few reports are available of patients in whom cancer of the breast developed after intensive therapy with estrogens. In view of the extensive use of estrogens in treatment, and the comparatively common nature of cancer of the breast, few workers in the field believe there is any connection between the administration of hormone and neoplastic change. The doses of estrogenic hormone used to induce mammary cancer in susceptible strains of animals are far larger than those used in human therapy.

TREATMENT OF CANCER

QUESTION: Are there any new chemicals effective in the treatment of cancer?

ANSWER: I know of no new chemicals which have been proved to be effective in the treatment of cancer in man.

GASTRIC CANCER

QUESTION (Dr. F. G. Kojis, New York): What is the effect of estrogens on gastric carcinoma?

ANSWER: No effect has been shown to be exerted by estrogens on the course of gastric carcinoma.

USE OF TESTOSTERONE IN CANCER OF THE BREAST

QUESTION (Dr. Clarence Bernstein, Orlando, Fla.): What is the average dosage of testosterone propionate in the treatment of metastases of breast cancer (in a patient of average weight), with pleural effusion? Is there any real danger of overdosage and what would be the clinical or physiologic effects?

ANSWER: The usual dose of testosterone propionate in the treatment of osseous metastasis from cancer of the breast is 25 mg. daily by intramuscular injections. The development of marked symptoms of masculinization is an indication for decreasing the dose. The compound should be used to its biologic effect. There is real danger of overdosage in certain rare patients; in these persons severe hypercalcemia may occur and be marked by all the usual symptoms of this disorder. Patients receiving testosterone propionate therapy should be checked at regular intervals for blood calcium levels.

21. Gilman, A., and Phillips, F. S.: *The Biological Actions and Therapeutic Applications of the B-Chloroethyl Amines and Sulfides*, Science 103: 409, 1946.

22. Jacobson, L. O.; Spurr, C. L.; Guzman Barron, E. S.; Smith, T.; Lushbaugh, C., and Dick, G. F.: *Nitrogen Mustard Therapy*, J. A. M. A. 132: 263 (Oct. 5) 1946.

23. Rhoads, C. P.: *Nitrogen Mustards in the Treatment of Neoplastic Disease*, J. A. M. A. 131: 656 (Jne 22) 1946.

SURGERY FOR ABDOMINAL CANCER

QUESTION (Dr. Wilfred Dorfman, Brooklyn): Please discuss in further detail the type of surgery used for abdominal cancer. What type of case can be helped?

ANSWER: For an answer to this question the recently published book by Dr. Alexander Brunschwig, entitled "Radical Surgery in Advanced Abdominal Cancer" (1947, Chicago, University of Chicago Press) should be consulted. Most of the patients who were helped by Dr. Brunschwig were those who had considerable local extension of the primary cancer without blood-borne metastases.

TREATMENT OF MULTIPLE MYELOMA

QUESTION (Dr. Nathan Schechter, Ottawa, Ontario, Canada): What is the best treatment of multiple myeloma?

ANSWER: The course of multiple myeloma untreated is so variable that firm conclusions as to the best method of therapy are difficult to formulate. The use of such compounds as "stilbamidine" (4,4'-diamidinostilbene) is still in the experimental phase.

HEMATOLOGY

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Important advances in hematology during the past year concern the use of folic acid in anemia and further trial of radioactive isotopes and other new chemicals in the treatment of leukemia and polycythemia. The therapeutic application of folic acid has reemphasized also the need for an accurate laboratory study and classification of the anemias before treatment is begun, since this drug is indicated only with macrocytosis.

FOLIC ACID

Synthetic folic acid (pteroylglutamic acid) is now available in unlimited quantities. It is of value only in a macrocytic anemia with a megaloblastic bone marrow. Important examples of such an anemia are (1) idiopathic pernicious anemia, when there is deficient formation of a specific erythrocyte-maturing factor (EMF); (2) macrocytic nutritional anemia in children due to a defect in supply or absorption, the macrocytic anemia of pregnancy due to increased need and the macrocytic anemia of adults dependent on a defective absorption of the specific substances resulting from a small bowel lesion such as obstruction or multiple anastomoses; (3) sprue, and (4) pellagra. There is no evidence that folic acid helps in a hypochromic anemia due to a deficiency of iron or in the normocytic anemias due to other causes such as infection, malignancy or increased hemolysis. Folic acid may well be the specific substance needed by the developing red cell to complete its development in the marrow before release into the blood stream. Growing red cells lacking this substance are larger than normal, so that macrocytosis is an indication of a need for the drug. The routine use of folic acid in every type of anemia is to be deplored.

Folic acid when given in sufficient amounts in a properly diagnosed and selected case will relieve the anemia and macrocytosis with a return of the blood to

normal. The glossitis, diarrhea, weakness and anorexia often seen in such patients may be relieved entirely also. The drug is quickly absorbed and is effective by mouth. It seems the drug of choice in the treatment of the macrocytic anemia of sprue, pellagra, pregnancy and other nutritional disturbances. Probably the nutritional defect is the same in each instance; namely, a loss of supply or absorption of a specific substance which may be folic acid. All such conditions are responsive to the administration of a potent liver extract, so that folic acid is replacing an already satisfactory treatment largely because it may be given in any amount and by mouth rather than by hypodermic injection.

Should folic acid replace liver extract in the treatment of pernicious anemia? This is a complicated disease involving (1) the hemopoietic system, (2) the gastrointestinal tract and (3) the peripheral and central nervous systems. The disease is a primary defect in the gastric mucosa resulting in a defective formation of the specific erythrocyte-maturing factor (EMF) also deficient in the macrocytic anemias already discussed. The exact cause of the lesion in the nervous system has never been clear, although it seems evident that there is something lacking which is necessary for the normal nutrition of nerve tissue. It has not been known whether this is the same substance needed to form red cells, although it has been evident to all hematologists that the symptoms and signs referable to the nervous system were benefited and often relieved by adequate liver therapy. Perhaps experiences with folic acid have cleared up this question.

The macrocytic type of pernicious anemia is cured completely by the use of folic acid, probably because a specific deficiency is supplied. There is no evidence, however, that folic acid has any influence on the neurologic lesion of pernicious anemia. On the contrary, experience suggests that the lesions in nerve and spinal cord may develop rapidly even with folic acid therapy adequate to relieve the anemia. The neurologic lesion is the most disabling and serious phase of pernicious anemia. Once well developed it is difficult to help by treatment, so that any treatment which does not influence the neurologic lesion should not be used.

Folic acid should not be used for the routine treatment of pernicious anemia. Liver extract remains the treatment of choice for this disease. Properly carried out it is almost a perfect treatment for pernicious anemia. There is no evidence that the addition of folic acid to liver extract enhances its value in pernicious anemia. It only adds to the cost. In patients allergic to liver extract the best substitute is folic acid. Such a condition is rare, however, and can usually be handled by changing the brand of the liver extract used. In our large series colleagues and I have encountered no patient whom we could not treat with some liver extract.

Folic acid, while not satisfactory for the treatment of pernicious anemia, has helped in clarifying the mode of action of liver extract in the macrocytic anemias. Liver extract has been thought of in the past as actually supplying some missing substance necessary for the normal growth of red cells and for the nutrition of nerve tissue. Liver extract does contain a small amount of folic acid but not enough to explain its beneficial effect on blood formation. Recent work indicates that the liver extract activates substances needed by erythrocytes and nerve tissue through its general action on cellular

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Read in a Panel Discussion on Recent Advances in Treatment before the joint meeting of the Section on Internal Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

metabolism. It has been suggested that so far as the red cells are concerned the action of liver extract is to free folic acid (pteroylglutamic acid) from its inactive conjugated form, in which it naturally occurs in food-stuffs. Thus released, it enters into the growth of red cells. It probably similarly makes available some substance needed by nerve tissue, so far undetermined, which is not folic acid. Further study may identify such a substance. This point of view on the action of liver extract suggests that pernicious anemia is a complex type of cellular enzyme disturbance which the extract restores to normal with release of specific substances needed for normal red cell growth (pteroylglutamic acid) and for the normal nutrition of nerve tissue (a substance so far not identified).

RADIOACTIVE ISOTOPES IN TREATMENT OF LEUKEMIA AND POLYCYTHEMIA

Roentgen irradiation has long been the best available method for treating leukemia. It only slightly prolongs life, however, although the patient is made more comfortable by such therapy. Radioactive isotopes in recent years have been tried to replace roentgen therapy. Radioactive phosphorus, P^{32} , has been most widely used. The effect of this isotope is identical with that of other forms of irradiation. The only value claimed for it is the absence of radiation sickness. This is of no significance, however, in the hands of many radiologists who use small doses of roentgen rays. It has been suggested that no radioactive isotope should be used for treatment if the half-life is more than ten days because of possible unfavorable late effects from the long-continued irradiation. The half-life of radioactive phosphorus is 14.3 days. The occurrence of acute leukemia in patients with polycythemia treated with radioactive phosphorus raises the question of such possible ill effects. Even with the availability of P^{32} from Oak Ridge the drug remains expensive, requires special facilities for handling and is not generally available for clinical use. It has not been widely used but has been employed largely in research centers. More recently radioactive gold and manganese have been employed in the treatment of leukemia with much the same results as with P^{32} .

The use of radioactive isotopes has not greatly changed the outlook of the patient with leukemia. All patients eventually die from the disease. The average length of life in leukemia without any treatment is three years. With roentgen therapy the average is 3.5 years, and the patient is more comfortable. With radioactive phosphorus treatment the average is 3.6 years. The clinician should not feel that his patient is being deprived of an indispensable treatment if radioactive phosphorus is not available, provided roentgen therapy is used.

Other chemicals which have been found to have an effect similar to roentgen rays have been tried for leukemia. The nitrogen mustards have such an effect but are more valuable in Hodgkin's disease than in leukemia; even here, however, the effect is not remarkable. Urethane (ethyl carbamate) has been tried recently. This drug and nitrogen mustard were first used because they were found to cause leukopenia. When administered it has an effect much like roentgen irradiation but may cause nausea and vomiting. It is now being employed experimentally in many clinics.

There is no evidence that it has any curative effect, but it may prove to be a valuable treatment for leukemia since it has few toxic effects, is readily available and is cheap. It may prove to be as valuable as roentgen irradiation in many cases. It is more effective in the myeloid than the lymphoid types of the disease.

In polycythemia the radioactive isotopes are probably the treatment of choice if readily available. The results with repeated venesections in this disease are most satisfactory, however, and so far the best alternative treatment. The effects with P^{32} are only temporary. There is no evidence that a patient lives longer with such treatment than with venesection. Only time can determine the place of such drugs in the treatment of polycythemia.

ABSTRACT OF DISCUSSION

PERNICIOUS ANEMIA WITH CORD SYMPTOMS

QUESTION (Dr. V. E. Lascara, Raleigh, N. C.): Given a case of pernicious anemia with spinal cord symptoms, what is the best therapeutic procedure?

ANSWER: A patient suffering from pernicious anemia with symptoms referable to the spinal cord requires more intensive treatment than with an anemia only. At the beginning 15 units of liver extract is given daily for two weeks. After this initial treatment 15 units is given twice weekly for three months. An injection of 15 units is then given weekly indefinitely, or at least until it is shown that no further improvement in the cord lesion is possible. This improvement may be slow, however, and may continue for a long period. A full diet including abundant meat, eggs, fruit and vegetables without an excess of carbohydrate should be insisted on. It is a question whether added vitamin B helps the cord lesion. It is a good procedure, however, to give a teaspoonful of dried brewer's yeast powder three times a day.

TREATMENT OF POLYCYTHEMIA

QUESTION (Dr. R. H. Clark, Hattiesburg, Miss.): Discuss further treatment of polycythemia.

ANSWER: Idiopathic polycythemia vera responds well to the administration by mouth or intravenously of radioactive phosphorus (P^{32}). This is available, however, only in larger centers. The final results of the treatment of polycythemia with this radioactive isotope will depend on the clinical course observed as the result of such treatment. Venesection is a satisfactory method of treating idiopathic polycythemia vera. The red cell mass (hematocrit reading times blood volume) is greatly increased in this disease and should if possible be determined in gaging treatment. A large amount of blood must be removed, depending on the level of the red cell mass. This is variable. It is safe to do venesections until the hematocrit reading shows 45 cc. of red cells per hundred cubic centimeters of blood.

CEREBRAL HEMORRHAGE

QUESTION (Dr. Sixto Y. Orosa, Bacolod, Philippines): Is it logical to use "dicumarol" or heparin in cerebral hemorrhage? Have cases been reported? Has folic acid been tried in leukemia? If so, with what results?

ANSWER: There is no reason to use heparin or "dicumarol" in cerebral hemorrhage. Folic acid has been tried in leukemia without success.

LEUKEMIA

QUESTION (Dr. Nathan Blumberg, Philadelphia): What is the value of urethane and nitrogen mustard in the leukemias and what is the usual life span after these drugs have been given to a patient with leukemia?

ANSWER: Both urethane and nitrogen mustard may help leukemia. These should be tried early in the course of the

disease or when the patient no longer responds to irradiation. The life span of patients with leukemia is so variable it is not possible to estimate this after the use of such drugs.

PERNICIOUS ANEMIA

QUESTION (Dr. P. Lancione, Bellaire, Ohio): Just how would you treat a patient with pernicious anemia?

ANSWER: A patient with pernicious anemia should be treated intensively at the beginning and adequately throughout his life. An excellent plan is as follows: 15 units of liver extract daily for the first two weeks, twice weekly for three months, weekly for three months, twice monthly for six months and monthly for the life of the patient.

CRUDE LIVER AND LIVER EXTRACT

QUESTION (Dr. Leslie S. Harrison, Flushing, N. Y.): Is crude liver better than liver extract for treatment of pernicious anemia?

ANSWER: It is doubtful whether crude liver extract is better than a refined preparation for the treatment of pernicious anemia. Some workers have thought that the cord lesions of pernicious anemia might be helped more by the crude extracts.

FOLIC ACID AND NEUROLOGIC RELAPSES

QUESTION (Dr. Morton S. Berk, Boston): What is the evidence that folic acid may cause an actual increase in the incidence of neurologic relapses in pernicious anemia?

ANSWER: Numerous workers have reported the development and progress of neurologic lesions in patients having intensive folic acid therapy. At times the lesions seem to develop explosively. There is no proof, however, that the incidence is greater. All agree with Dr. Tom Spies (*Experiences with Folic Acid*, 1947, Chicago, The Year Book Publishers, Inc., p. 82), however, that "It seems evident that folic acid does not always prevent the occurrence of combined system disease nor does it reverse the degenerative process once it has begun." These observations suggest that until more is known of the mode of action of folic acid in hemopoiesis and until a factor essential to the preservation of the central and peripheral systems is found, liver extract is the safest and most effective therapeutic agent for the routine treatment of pernicious anemia.

THE BLOOD PATTERN IN MALIGNANCY

QUESTION (Dr. Arthur H. Hopkins, Philadelphia): Will you give us your opinion of the value of "The Blood Pattern in Malignancy" as demonstrated and described by Dr. Leonard Bolen?

ANSWER: I have had no experience with this procedure.

USE OF NITROGEN MUSTARDS

QUESTION: Discuss the use of nitrogen mustards in the treatment of lymphatic diseases.

ANSWER: Many lymphoblastomas respond to treatment with the nitrogen mustards. If a lesion does not respond initially to irradiation it probably will not respond to nitrogen mustard, so roentgen irradiation seems the method of choice. After a patient's lesion has become resistant to irradiation it may respond, however, to the administration of nitrogen mustard, sometimes with restoration of sensitivity to irradiation. The greatest usefulness of nitrogen mustard so far is in Hodgkin's disease, in which the palliative results may be most striking. This drug is not a cure, however, any more than irradiation is a cure.

SECONDARY ANEMIA

QUESTION: What is the most effective way of treating secondary anemia?

ANSWER: The term "secondary anemia" is an unfortunate one. Earlier it was used to designate an anemia due to a known cause as opposed to "primary anemia" of unknown origin. In this sense both pernicious anemia and chlorosis were grouped together as primary anemia. Anemias due to hemorrhage, increased hemolysis, bone marrow aplasia, and bone

marrow depression were classed as secondary. Every case of anemia should be studied carefully in the laboratory for evidence of increased hemolysis and for size and hemoglobin content of the red cell. Such data usually give a clue to the cause of the anemia. The clinical study of the patient should give other information. After determining the type and cause of anemia, treatment is simple, provided the cause can be removed or compensated for. If there is a low color index and/or volume index iron is indicated. This is best given as ferrous iron in adequate doses such as 9 to 15 grains (0.6 to 1 Gm.) daily.

FOLIC ACID

QUESTION (Dr. B. Spencer, Sterlington, La.): Does folic acid have a diuretic action?

ANSWER: No.

FOLIC ACID AND IMPULSE TRANSMISSION

QUESTION (Dr. George J. Boines, Wilmington, Del.): Has folic acid any effect on impulse transmission at the myoneural junction?

ANSWER: No.

THE EFFICACY OF FOLIC ACID

QUESTION (Dr. S. R. Blatteis, Brooklyn): What are the criteria indicating the efficacy of folic acid and is it advisable to continue the administration of folic acid at all during a remission in pernicious anemia?

ANSWER: Many workers have shown that macrocytic anemia due to a deficiency of the specific erythrocyte-maturing factor such as pernicious anemia responds dramatically to the administration of folic acid. The red cell count returns to normal and macrocytosis disappears. True pernicious anemia is due to a permanent deficiency of the specific factor, so must be treated throughout the life of the patient. Treatment should never be discontinued during a remission. Pernicious anemia is best treated with liver extract and not by folic acid alone.

FOLIC ACID IN MACROCYTIC ANEMIA

QUESTION (Dr. Paul W. Spear, Brooklyn): Is folic acid effective in the macrocytic anemias due to nutritional deficiency? Has it been tried in so-called achrestic anemia?

ANSWER: Folic acid is effective in the macrocytic anemia of sprue and the macrocytic anemia of childhood, both of which are due to a deficiency of the specific erythrocyte-maturing factor. There is much to suggest that folic acid is this specific factor. The term achrestic anemia has been used to designate a macrocytic anemia similar to pernicious anemia which does not respond to adequate liver therapy. It is doubtful whether there is a pernicious anemia which does not respond to liver. Achrestic anemia is probably not due to a deficiency of the specific erythrocyte-maturing factor and so would not be expected to respond to folic acid. A macrocytic anemia is present in liver disease, primary aplastic anemia, and in monocytic leukemia.

HYDROCHLORIC ACID NOT RECOMMENDED

QUESTION (Dr. J. P. Scias Jr., Buffalo, N. Y.): In the treatment of pernicious anemia or other anemias associated with achlorhydria, does hydrochloric acid by mouth play a part?

ANSWER: The use of hydrochloric acid does not influence the results of treating pernicious anemia with liver and liver substitutes. It is unpleasant to take. There seems no indication for its use.

RUTIN THERAPY

QUESTION: What is the present status of rutin therapy?

ANSWER: Rutin is a glycoside which is said to be "effective in the treatment of conditions arising from high blood pressure associated with increased capillary fragility" (*THE JOURNAL* 131:743 [June 29] 1946. Reports are conflicting, but it is doubtful whether capillary permeability is significantly influenced by the use of rutin.

RECENT ADVANCES IN THE TREATMENT
OF PULMONARY DISEASESJAMES J. WARING, M.D.
Denver

Without doubt the most important recent advance in the treatment of pulmonary diseases has been the use of antibiotics, especially the use of streptomycin in the treatment of pulmonary tuberculosis and its complications.

The following six organisms which cause an enormous amount of pulmonary disease either primarily or secondarily are highly sensitive to streptomycin in vitro:

Mycobacterium tuberculosis
Hemophilus influenzae
Hemophilus pertussis
Klebsiella pneumoniae
Pasteurella pestis
Pasteurella tularensis

It is further significant that with certain exceptions this in vitro sensitivity can be used and should be used as a good index of the possible effectiveness of the antibiotic in the treatment of infectious processes caused by these organisms.

Briefly I shall discuss: (1) the use of streptomycin in tuberculosis, (2) recent advances in the treatment of primary and secondary pulmonary diseases and (3) recent advances in the prevention of pulmonary diseases.

THE USE OF STREPTOMYCIN IN TUBERCULOSIS

If streptomycin were perfectly harmless, it could be given to every patient with active tuberculosis regardless of the nature and extent of the tuberculous disease and its complications. However, streptomycin is not perfectly harmless. This must not discourage us, since many of our most useful drugs are injurious if given unwisely.

Here let me say that although my personal experience with the use of streptomycin in tuberculosis has been meager, my experience with tuberculosis goes back forty years last month. The officers at Fitzsimons General Hospital have afforded me repeated opportunities to observe some of their cases. Moreover, John Barnwell, the physicians in the Veterans Administration and Corwin Hinshaw of the Mayo Clinic have given me the benefit of their experience with streptomycin.

In giving the public and the medical profession full information on what has been done with streptomycin in the treatment of tuberculosis, it is vitally important that neither the toxic effects nor the benefits be magnified on the one hand or minimized on the other.

About one thousand human beings with tuberculosis in one form or another have been treated with streptomycin. The most experienced men say that they have seen no patient who regretted taking the drug and no patient to whom they regretted giving the drug.

In what forms of tuberculosis should the drug be used? Without hesitation the drug should be given in tuberculosis meningitis with or without miliary tuberculosis of the lungs. In days gone by, all these patients died. Today streptomycin will save a few to live possibly many years in good condition. Some will have their lives prolonged only months but will relapse and die after surprising temporary improvements; others will survive a varying period but with lingering signs and symptoms of serious damage by the disease to the central nervous system. A few will survive but with complete loss of hearing, which may be due to the disease, perhaps to the drug—time will tell. The ultimate fate of these patients with tuberculous meningitis treated with streptomycin cannot yet be told; thus far the majority relapse and die. More time for observation is necessary. The highly significant thing is that streptomycin gives such dramatic evidence of ability to control in a few instances this most fatal form of tuberculosis.

In treating meningitis the drug must be given both intramuscularly and intrathecally. Doses of 0.5 to 2 Gm. in the spinal canal have produced in a few hours complete paralysis of both lower extremities with paralysis of bladder and bowels. If the patient does not die of the meningitis, complete recovery from the paraplegia with return of normal function of both bladder and bowels are to be expected. Even with the purest forms of streptomycin now available, not more than 100 mg. should be given daily intrathecally. The recommendations of the experts vary from 10 to 100 mg. I again remind you that we are dealing with a hitherto invariably fatal form of tuberculous disease. Unavoidable bad effects of the drug must be tolerated if useful life can be saved. Miliary tuberculosis of the lungs without meningitis responds sometimes even more dramatically than meningitis.

A number of patients with oral and pharyngeal tuberculous lesions, ominous complications, have completely healed these distressing local forms of the disease with streptomycin by intramuscular injection with or without streptomycin inhalations.

Tuberculous laryngitis and tracheobronchitis also seem amenable to streptomycin.

In general, the indications in pulmonary tuberculosis are to give the drug to patients with early, acute exudative lesions which are progressing despite good treatment along orthodox lines. Acute spread to the contralateral lung after thoracoplasty would seem to be a prime indication. Ordinary chronic fibroblastic tuberculosis with much fibrosis and cavity formation is not responsive to the drug. Streptomycin shows little or no effect on the caseous necrotic lesions, which are later often the cause of relapse. Collapse therapy and bed rest still play indispensable roles in treatment.

Finally, two questions must be answered. First, can streptomycin be given in effective doses and not at the same time render the patient for an indefinite period more or less deaf? The answer is yes, provided that by frequent audiometric determinations one catches the earliest sign of damage to hearing and stops the drug. How much good will have been done the patient by this time is unpredictable. The experts agree that deafness is not a serious or frequent toxic effect.

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Read in a Panel Discussion on Recent Advances in Treatment before the joint meeting of the Section on Internal Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

The second and more important question is not so easily answered. Can streptomycin be given in remedial doses and not make life for the patient more or less miserable if not hazardous for an indefinite period because of damage to the sense of equilibrium? More experience is needed before final answer can be given to this question. Some of the experts are frankly pessimistic, while others are hopeful that one way or another damage to the vestibular branch of the eighth nerve can be avoided or minimized.

Basic requirements for the intelligent use of streptomycin in tuberculosis are adequate clinical experience with the natural history of the disease and its often surprising variations and a knowledge of its pathology. Thus fortified the clinician will know when to step in with streptomycin to the best advantage of his patient.

As to the future of "antibiotic" therapy in tuberculosis, four possibilities exist: (1) that streptomycin will be altered by the chemists' retaining and even enhancing its antibiotic effects but getting rid of its peculiar and specific neurotoxic effect; (2) that combined or alternating use of streptomycin with other antibiotics against the tubercle bacillus may be more helpful than treatment with one antibiotic alone; (3) that clinicians can arrange a dose schedule or method of administration by which damage to the eighth nerve can be avoided even if the chemists cannot improve the drug, and (4) that a new, safer and more potent antibiotic against the tubercle bacillus may be discovered.

PRIMARY AND SECONDARY PULMONARY CONDITIONS

Of fundamental importance to good chemotherapy of pulmonary diseases are: (1) identification of the organism causing the infectious process; (2) determination of its sensitivity to one or more antibacterial agents (penicillin, streptomycin, sulfonamide drug, etc.); (3) repeated tests, especially in chronic pulmonary diseases, for changes in bacterial resistance and predominant flora, and (4) timely blood cultures.

As to methods of antibiotic therapy, aerosols have their advocates but the preferred method nearly always is intramuscular injection. Aerosols are troublesome, often irritating to the mouth and throat and certainly not as effective.

Taplin and Bryan of Rochester, N. Y. have devised apparatus and a method for the production and inhalation of micronized antibacterial agents. This method of administration awaits adequate clinical trial.

Tularemia pneumonia, recognized early, is the ideal disease to treat with streptomycin.

Hemophilus influenza infections of the respiratory tract respond well to combinations of sulfadiazine and streptomycin. Acute inflammation of the epiglottis due to this organism with obstruction of the airway requires tracheotomy and sulfadiazine.

Pneumonia due to Klebsiella pneumoniae must be recognized early and treated vigorously with streptomycin.

The pneumonitis that formerly progressed to abscess of the lung, if recognized early and treated vigorously with both sulfonamide drugs and penicillin, may resolve without formation of cavity.

Since Pasteurella pestis is highly sensitive to streptomycin, it may be hoped that streptomycin will save some of the patients with pneumonic plague.

Aspiration pneumonitis may be prevented or cured by timely and skilful bronchoscopic aspirations of retained secretions plus the use of penicillin.

The combined use of sulfonamide drugs, penicillin and streptomycin parenterally, by intratracheal instillation and by inhalation will not alter the irreversible changes of chronic bronchiectasis but will make unavoidable lobectomy safer. Without doubt chemotherapy has made thoracic surgery almost as safe as abdominal surgery.

I direct your attention to the statement made by Bryan Blades that in World War II the death rate of troops from chest wounds was the lowest ever recorded in the history of warfare. Blades said that the reduction in mortality rate from 24.5 per cent in World War I to 8.1 per cent in the recent conflict was due not so much to technical improvements but to skilful preoperative management and judicious timing and selection of surgical procedures.

Mention should be made here of the Blalock-Taussig and other operations for the improvement of deficient circulation to the lungs and the transformation of the pulmonary-circulatory invalid with congenital heart disease into a reasonably well person.

PREVENTION OF PULMONARY DISEASE

A. Immediate Prevention.—Here should be mentioned once more the use of sulfonamide drugs and penicillin (1) to prevent postoperative pulmonary complications, especially after thoracic surgery and (2) to prevent aspiration pneumonitis; the use of streptomycin to prevent acute tuberculous spread to the other lung after thoracic surgery; the use of anticoagulants or venous ligation or both to prevent pulmonary embolism.

Your attention is again directed to the poliomyelitis exhibit of A. B. Baker and the Minneapolis group. In the treatment of certain forms of bulbar poliomyelitis, they have shown the great value of timely tracheotomy, judicious aspiration of bronchial secretions, the avoidance of hypoxia and the use of penicillin in the prevention of pulmonary complications.

B. Remote Prevention.—1. Vaccination against influenza viral infections is promising. 2. This country has been slow to approve BCG (bacillus Calmette Guérin) vaccination against tuberculosis. At least two medical schools in this country are using BCG to protect medical students and nurses. Before this decade runs out it seems likely that highly exposed groups and highly susceptible sections of our population will be offered the protection against tuberculosis that is promised by BCG vaccination.

CONCLUSION

Universal and conscientious application of the following four procedures will powerfully assist the campaign against tuberculosis: (1) mass roentgen examination of entire communities; (2) routine roentgenograms of the chests of those admitted to general hospitals; (3) more frequent sputum examinations by general practitioners, and (4) BCG vaccination of highly exposed groups and highly susceptible sections of our population. Only recently has the importance of these procedures become adequately appreciated.

ABSTRACT OF DISCUSSION

MINIMAL TUBERCULOSIS AND STREPTOMYCIN

QUESTION: Why not treat minimal tuberculosis with streptomycin?

ANSWER: At present—please note that I emphasize at present—physicians with the largest experience with the use of streptomycin are unwilling to use streptomycin in the treatment of minimal pulmonary tuberculosis for the following reasons: 1. The vast majority of these patients will get well without streptomycin. 2. The drug is toxic and the immediate and remote bad effects are not accurately predictable. 3. The development of "bacterial resistance" may leave the patient with an incompletely eradicated infection due to an organism now highly resistant to streptomycin. Ninety-five to 97 of 100 patients with minimal pulmonary tuberculosis will get well with the usual orthodox treatment without streptomycin. Don't shoot at a dickiebird if shooting will leave you with empty gun in the path of a tiger! It is impossible at the onset of their disease to predict which of the hundred will be the 3 or the 5 patients who will do badly and should have streptomycin to prevent spread of their disease. If the drug were perfectly harmless it could be given to all and accurate prophecy would be of no importance. Unfortunately practically every patient taking 2 Gm. of streptomycin daily for three to four weeks will have damage to vestibular function and a few may become more or less deaf. Improvement in the drug, modifications of dose schedule or methods of administration or combination with another antibacterial agent or discovery of a safe, more potent antibiotic may make it possible to use chemotherapy for every patient with tuberculosis. It may be overoptimistic to say that this day is close at hand! As for "bacterial resistance," this is a disturbing phenomenon which is being studied intensively.

HOME TREATMENT WITH STREPTOMYCIN

QUESTION: Can streptomycin be used in the home for treatment of tuberculosis?

ANSWER: The best place (the only place according to experts) for a tuberculous patient taking streptomycin is in the hospital or sanatorium under the supervision of a physician competent in diseases of the chest and experienced in the use of streptomycin. It can be formidable if not impossible to treat a patient with tuberculous meningitis in his home. Since intrathecal injections of streptomycin frequently cause temporary paralysis of bladder and bowels the difficulties of the nursing problem at home would be multiplied. It is also difficult to imagine a patient able to pay for 2 Gm. of streptomycin daily and at least two visits daily by his physician and nursing care besides and not able to go to a hospital. Tuberculous adenitis with or without sinus, all tuberculous fistulas, tuberculosis of the mouth, pharynx and larynx and acute tuberculous spread in the lungs all could be treated at home if absolutely necessary. Certainly, if a patient could not pay for sanatorium care and streptomycin but could pay for streptomycin only, I would give him his chance at home. In view of the serious disturbance of equilibrium which may result from streptomycin, no physician should undertake to use streptomycin in tuberculosis without sufficient preparation. He must have (1) adequate experience with diseases of the chest; he must have (2) studied the scientific exhibits on streptomycin at this hundredth anniversary of the American Medical Association; he should have (3) conferred with those who have used the drug in the treatment of tuberculosis, and (4) he should have familiarized himself with the published reports on the use of streptomycin. I recommend particularly (1) Carl Muschenheim's fine article "The Streptomycin Treatment of Tuberculosis" (*New York Med.* 3:17 [May 20] 1947); (2) T. F. Paine, R. Murray and M. Finland: "Streptomycin: I. Bacteriologic and Pharmacologic Aspects; II. Clinical Uses" (*New England J. Med.* 236:701 and 748 [May 8 and May 15] 1947), and (3) "Symposium on Streptomycin" (*Am. J. Med.* 2:419 [May] 1947).

MICRONIZED THERAPEUTIC AGENTS

QUESTION: What is the micronized method of giving antibiotics?

ANSWER: In *Science* for May 9, 1947 will be found an article "Administration of Micronized Therapeutic Agents by Inhalation or Topical Application" by George V. Taplin and Fred A. Bryan of the University of Rochester, Rochester, N. Y. Taplin and Bryan have devised apparatus for the grinding of certain therapeutic agents to a very fine or "micronized" state. They have also devised the apparatus for the administration of this finely ground powder by inhalation. Although this method has not yet had adequate clinical trial, preliminary reports indicate that therapeutic concentrations in the blood may be easily secured and maintained. The clinical and bacteriologic responses to this treatment have been excellent in more than 40 cases of various diseases in which penicillin therapy was indicated. Taplin and Bryan stated that patients prefer this type of treatment to either intramuscular injections or aerosol inhalations. Of further interest is that local sensitivity reactions to penicillin in the last 35 cases were eliminated by the incorporation of 2 to 5 mg. of finely ground diphenhydramine hydrochloride in each dose of penicillin. If it will be possible to give streptomycin by this method in smaller but effective doses to tuberculous patients, it would prove a most important discovery.

MEDIASTINAL LYMPHADENOPATHY

QUESTION: What course of therapy would you pursue for patients who have undiagnosed bilateral mediastinal lymphadenopathy?

ANSWER: Exploration of the chest by an experienced thoracic surgeon is just as safe as exploration of the belly by an average surgeon. In other words, exploratory thoracotomy is not yet quite as safe in average hands as exploratory laparotomy. Sulfonamide drugs, penicillin and streptomycin have certainly reduced the risk, however. Note Meade's recent report of 236 lobectomies with only one death. My colleague, Col. John B. Grow of Denver, who is a skilled thoracic surgeon, is convinced that it is unwise, unscientific and unjust to make a diagnosis of Hodgkin's disease on the basis of presumed favorable response to irradiation of the mediastinum. He thinks it much better to do a diagnostic mediastinotomy and secure a piece of tissue or gland for diagnosis. The well known tendency of Boeck's sarcoid to improve spontaneously is one source of error. Perhaps he is right, but the fact remains that occasionally the surgeon is unable to make a diagnosis without removing the lung or a lobe of the lung, with the result that a major operation is done unnecessarily. Since five year cures of cancer of the lung after pneumonectomy are very few, and since it is likely that late diagnosis is partly responsible for this discouraging state of affairs, both surgeon and physician must collaborate to secure earlier diagnosis. More frequent diagnostic thoracotomy offers one way of arriving at an early diagnosis. In this matter of early diagnosis of malignant diseases of the lung, I would urge the importance of three most useful procedures: (1) roentgen examination of the chest of every patient admitted to a general hospital; (2) more frequent resort to bronchoscopic examination, and (3) examination of fresh sputum obtained at bronchoscopic examination for tumor cells and incidentally for tubercle bacilli.

CARCINOMA OF LUNG

QUESTION: Under what circumstances would you recommend surgical treatment of carcinoma of the lung?

ANSWER: I am pessimistic about the prognosis of cancer of the lung even when the diagnosis has been made early and even when the surgeon is very experienced. At this date the five year cures after surgery are no more than 5 per cent. This figure should be greatly improved with increasing knowledge of diseases, greater uses of the roentgen ray and improved methods of diagnosis such as staining bronchial secretions for tumor cells.

STREPTOMYCIN IN ACTIVE TUBERCULOSIS

QUESTION: What is the place of streptomycin in the treatment of the usual case of active pulmonary tuberculosis?

ANSWER: Streptomycin should be used in the early acute exudative types of pulmonary tuberculosis. The patient will be subjected to unnecessary risks and expense if streptomycin is given for the usual fibroulcerative case of pulmonary tuberculosis. At this time, streptomycin cannot be recommended for the treatment of (1) minimal pulmonary tuberculosis, (2) chronic fibroid or fibrocaceous pulmonary tuberculosis, (3) acute destructive and apparently terminal types of pulmonary tuberculosis or (4) chronic tuberculous empyema.

TUBERCULOSIS SANATORIUMS

QUESTION (Dr. George J. Boines, Wilmington, Del.): Do you advise the use of streptomycin for general use in state tuberculosis sanatoriums?

ANSWER: It all depends on what you mean by "general use." I think that streptomycin should be available for selected cases in all tuberculosis sanatoriums.

TUBERCULOUS SINUS

QUESTION (Dr. Victor Siegel, Red Banks, N. J.): Can streptomycin be used for tuberculous empyema sinus?

ANSWER: Many cases of tuberculous sinus are improved by streptomycin. How much good will result from the use of streptomycin in "tuberculous empyema sinus" will depend on the size and pathologic state of the empyema "pocket" and also on the state of the underlying pulmonary parenchymal disease.

FAILURE OF STREPTOMYCIN IN EMPYEMA

QUESTION (Dr. Alexander Tish, Washington, D. C.): Why has streptomycin intrapleurally been of little or no value in tuberculous empyema and how can the failure be explained?

ANSWER: Streptomycin is of little or no value in tuberculous empyema because of the pathologic nature of this serious complication of pulmonary tuberculosis. It must be understood that streptomycin is helpful in early acute exudative pulmonary tuberculosis and has little or no effect on caseating lesions. It is likely that in tuberculous empyema innumerable small as well as large caseating lesions are located in the pleura and in the underlying lung. Hinshaw thinks that the pH of the empyema fluids may interfere with the bacteriostatic action of the drug.

HOW TO AVOID BAD EFFECTS OF STREPTOMYCIN

QUESTION (Dr. Sixto Y. Orosa, Bacolod, Philippines): Kindly suggest a plan for the administration of streptomycin for the treatment of pulmonary tuberculosis to avoid the bad effects on the patient.

ANSWER: In answering this question I should like it clearly understood that the suggested dose schedule has not been used long enough either to prove its efficacy or its harmlessness. I am convinced that daily doses of 2 Gm. for a period of one hundred and twenty days is too much. It seems possible already from animal experiment and clinical trials that a smaller daily dose in an intermittent schedule may be both effective and harmless. Suggested schedule of treatment: 1. Give 200 mg. of streptomycin intramuscularly every three hours; begin at 6 a. m., and give five doses in the twenty-four hours; not more than 1 Gm. daily. 2. Follow this schedule for two weeks; then stop for one week. Resume for two weeks, and stop for one week. 3. This schedule may be repeated for approximately one hundred and twenty days of actual administration of the drug. Time will tell whether this length of time and dose are optimal.

TUBERCULOSIS OF THE SKIN

QUESTION (Dr. Michael Margolies, Coatesville, Pa.): Is streptomycin of value in treating tuberculosis of the skin?

ANSWER: Experience is lacking to give adequate answer to this question.

"PROMIN" FOUND WANTING

QUESTION (Dr. S. A. Bolosky, Philadelphia): Has "promin" (sodium p,p-diaminodiphenylsulfone-N,N'-dixetrose sulfonate) by injection or "promizole" (4,2-diaminophenyl-5'-thiazolylsulfone) by mouth been given a long enough trial in pulmonary tuberculosis?

ANSWER: It is possible that combinations of streptomycin with another antibacterial agent such as "promin" or "promizole" may be more effective than the use of streptomycin or "promin" or "promizole" alone. A combination of streptomycin with some other bacterial agent may have the advantage of permitting the use of smaller and less toxic doses of streptomycin. Much work needs to be done on the synergistic action of antibacterial agents. "Promin" by injection and "promizole" by mouth have been weighed clinically and found wanting.

WHAT'S NEW IN ENDOCRINOLOGY

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The object of this paper is to discuss the more important therapeutic advances that have occurred recently in the field of endocrinology. The most significant contributions have perhaps been those dealing with the use of antithyroid drugs and radioactive iodine in the treatment of toxic goiter and those dealing with the relation of androgens and estrogens to carcinoma of the prostate and breast respectively.

THE PITUITARY

Anterior Lobe.—Our knowledge of pituitary function has increased still further. Interesting developments have been the isolation in Evans' laboratory in the University of California of an adrenocorticotrophic hormone and of a purified growth hormone. Preliminary reports on the effects of the adrenocorticotrophic hormone are contradictory. According to Thorn and others¹ it caused stimulation of all the known functions of the adrenal cortex in 2 patients with pronounced hypopituitarism. According to other observers² it does not affect the excretion of sodium and chloride. Further observations will be necessary to determine the precise status of this material. It is available at the present time for experimental use in only a few laboratories. Addison's disease is sometimes caused by atrophy of the adrenal cortex as a result of inadequate stimulation by the anterior lobe of the pituitary. On theoretical grounds it would be desirable to treat the disease in such instances with a suitable pituitary extract. No evidence is yet available as to whether prolonged administration of adrenocorticotrophic hormone results in the development of antibodies which inhibit its effect. Most pituitary extracts available in the past have not been suitable for routine clinical use because of the temporary nature of their action. Preparations of the thyrotrophic hormone will temporarily cause an

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Read in a Panel Discussion on Recent Advances in Treatment before the joint meeting of the Section on Internal Medicine and the Section on Experimental Medicine and Therapeutics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

1. Forsham, P. H.; Thorn, G. W.; Prunty, F. T. G., and Hills, A. G.: Clinical Studies with Pituitary Adrenocorticotropin, *J. Clin. Endocrinol.*, to be published.

2. Mason, H. L.; Power, M. H.; Ryneason, E. H.; Ciaramelli, L. C.; Li, Choh H., and Evans, H. M.: Results of Administration of Anterior Pituitary Adrenocorticotrophic Hormone to a Normal Human Subject, *J. Clin. Endocrinol.*, to be published.

increase in basal metabolism in many patients in whom there is any thyroid tissue capable of function. The metabolism always returns to its initial level or even a lower level with prolonged administration. The longest period of increase in basal metabolism which I have observed in man during the administration of thyrotropic hormone has been nine weeks.

Some of the newer preparations of pituitary gonadotropin in powder form have caused some stimulation of ovarian function. In a few women with secondary amenorrhea it has been possible to induce menstruation and in a few women with anovulatory menstrual cycles it has been possible to induce ovulation.

The new preparation of the growth hormone developed by Evans is of interest but so far has not been tried adequately in man. Preparations of the growth factor available up to the present have not proved very effective in clinical medicine. Engle and others³ have observed temporary growth in a pituitary dwarf with a preparation of the growth factor.

The observations of Markee, Sawyer and Hollinshead⁴ that the hypothalamus plays a major role in the release of luteinizing hormone from the anterior lobe of the hypophysis is of importance because of the influence that neurogenic factors appear to play in the control of endocrine function.

Multiglandular Deficiencies Secondary to Hypopituitarism.—In patients showing decided loss of pituitary function such as those with chromophobe adenoma of the pituitary and hypopituitary cachexia (Simmonds' disease) evidence has been obtained of the presence of hypothyroidism, hypofunction of the adrenal cortex and hypogonadism. Thus patients with chromophobe adenoma of the pituitary may show a very low level of basal metabolism, a low blood pressure, reduction in the concentration of sodium in the serum, increase in the secretion of sodium in the urine, reduction in the fasting blood sugar and various evidences of hypogonadism, including atrophy of the genitalia, amenorrhea and impotence. Patients with pronounced hypopituitarism sometimes show typical addisonian crises which have to be treated with the parenteral administration of large doses of adrenal cortex extract and the intravenous administration of sodium chloride and dextrose. They also suffer from attacks of hypoglycemia which are difficult to distinguish from addisonian crises. Patients with deficiency of the adrenal cortex secondary to hypopituitarism do not appear to become pigmented as frequently as patients with Addison's disease caused by destruction of the adrenal glands.

Posterior Lobe.—A few interesting reports have appeared on the posterior lobe of the pituitary, but no outstanding advances have been made. The most practical development has been further demonstration of the fact that diabetes insipidus may be controlled satisfactorily either by insufflation of posterior pituitary powder into the nasal cavities or by the intramuscular injection of "pitressin tannate in oil."

THE THYROID; TOXIC GOITER

Three important developments have occurred in the treatment of toxic goiter: (1) irradiation of the pituitary, (2) the use of antithyroid drugs and (3) the use of radioactive iodine.

Irradiation of the Pituitary.—A close relationship exists between the anterior lobe of the pituitary and the thyroid. The following effects of administration of the thyrotropic hormone have been observed in man: (1) increase in basal metabolism in all patients except those with complete myxedema; (2) production of thyrotoxicosis in patients with nontoxic goiter; (3) production of a syndrome resembling exophthalmic goiter in patients with a normal or slightly subnormal level of basal metabolism, and (4) increase in the severity of toxic goiter.

As has been pointed out, the increases in basal metabolism have always been temporary and have disappeared with continued administration over a period of eight to nine weeks. In a few patients with exophthalmic goiter, prolonged administration appears to have resulted in a cure. Following the initial increase, the basal metabolism has dropped to the normal level and remained there. Exophthalmos has not been reported in man as a result of the administration of the thyrotropic factor but it has been observed in various experimental animals. Hyperthyroidism secondary to hyperpituitarism has been noted in some patients with acromegaly, and hypothyroidism secondary to hypopituitarism has been noted in patients with chromophobe adenomas of the pituitary and in those with Simmonds' disease and anorexia nervosa.

The evidence available supports the hypothesis that the thyroid is only one link in the chain of events leading to the development of the symptom complex known as toxic goiter. Overstimulation by the pituitary appears to be an important factor. The cause of the stimulation of the pituitary has not been definitely determined but is probably related to some disturbance in the hypothalamus. Attempts to treat the disease by removing or destroying the thyroid probably do not attack the fundamental cause.

I have attempted to apply the knowledge of the pituitary-thyroid interrelations by irradiating the pituitary in a series of 43 patients with toxic goiter. A permanent remission was produced in about one third of them. These observations are of great importance from the standpoint of the mechanism which may be involved in the development of toxic goiter. However, it is not recommended that irradiation of the pituitary be used for the routine treatment of toxic goiter at the present time, chiefly because the percentage of cures is too low. Theoretically, this treatment might result in damage to other functions of the pituitary and to important structures in the base of the brain above the pituitary. Several years have now elapsed since these patients were treated and so far untoward early or late complications have not been observed.

Antithyroid Drugs.—Thyroidectomy, antithyroid drugs and radioactive iodine affect the thyroid directly and probably do not attack the underlying cause of the disease. In actual practice, control of the thyrotoxic phase of toxic goiter has proved to be a satisfactory form of treatment. The two antithyroid drugs most commonly used have been thiouracil and propylthiouracil. Propylthiouracil produces fewer toxic reactions than thiouracil but is not free from danger. These drugs have been used in two ways, namely, to treat the disease medically and to prepare patients for operation.

3. Engle, E. T., and others: Personal communication to the author.

4. Markee, J. E.; Sawyer, C. H., and Hollinshead, W. H.: Activation of Anterior Hypophysis by Electric Stimulation in the Rabbit, *Endocrinology* 35:345-357 (June) 1946.

Medical Management: Sufficient time has not yet elapsed to determine the percentage of cures produced by thiouracil and propylthiouracil. The evidence available indicates that when the basal metabolism is maintained at the normal level with these drugs for periods of nine to twelve months, no recurrence of the disease is noted after omission of treatment in about 60 per cent of patients. The percentage of cures appears to be related to the length of time that the basal metabolism is maintained at the normal level before treatment is discontinued. The longer the drug is administered the higher the percentage of cures. Patients who are not cured by an initial course of treatment may show disappearance of the disease following a second or third course. Great caution must be used in concluding that toxic goiter has been cured by drug therapy because of the tendency of the disease to show spontaneous remissions and relapses and the observations of recurrence of the disease after many months of drug therapy. It will take several more years to determine the percentage of cures following adequate periods of administration. The development of these drugs represents an important advance in the treatment of toxic goiter, but they are not the final answer to the problem. In order for a drug to be satisfactory for medical management it must produce a cure in nearly all patients without producing toxic reactions. It is desirable to continue the observations already begun on the medical management of the disease in order to obtain more precise data on the percentage of cures. It is generally agreed that antithyroid drugs are valuable in the treatment of persistence and recurrence of toxic goiter following subtotal thyroidectomy and in the treatment of patients who present poor surgical risks; e. g., some older patients with cardiac decompensation.

Surgical Management: The introduction of anti-thyroid drugs, particularly propylthiouracil, represents an important advance in the preoperative preparation of patients with toxic goiter. With these drugs it is possible to eliminate the thyrotoxicosis completely in most instances, whereas iodine usually controls the disease only partially. Propylthiouracil is of the greatest value in the preoperative preparation of patients who have thyrotoxicosis in severe form, and these are the patients who have presented the most serious operative risks. With proper preparation, the mortality from thyroidectomy for toxic goiter has dropped almost to the vanishing point. Hospitalization of patients during the preoperative period is not necessary except in the presence of a crisis or some complication such as cardiac decompensation. Propylthiouracil is given until the basal metabolism drops to within normal limits. Iodine is then administered in addition to propylthiouracil for one week preceding operation in order to reduce hyperplasia and the danger of oozing of blood at the time of operation. Throughout the preoperative period the patient is given a diet high in calories. Operative procedures may be carried out a few days after admission to the hospital, thus greatly reducing the cost of hospitalization. Propylthiouracil may be discontinued at the time of operation but the administration of iodine is kept up until discharge from the hospital.

Radioactive Iodine.—The use of radioactive iodine represents an ingenious attack on the thyroid itself in patients with toxic goiter. Thyroxine contains 65 per

cent of iodine by weight. When small amounts of iodine are administered, the iodine is taken up almost entirely by the thyroid gland and, if radioactive, destroys many of the thyroid cells. An end result of such therapy is the development of areas of fibrosis in the thyroid gland. Myxedema may be caused by the administration of radioactive iodine to experimental animals. When given to patients with toxic goiter in proper amounts, it produces a cure in a large percentage of patients. As improvement sets in, the thyroid gland decreases in size. Patients receiving this form of treatment have not yet been followed long enough to determine the percentage of cures and the incidence of late complications, if any. No instance of carcinoma has been reported among patients followed up to the present time. In a few patients some temporary hoarseness has developed. Seidlin, Marinelli and Oshry⁵ have recently reported striking improvement in a patient with hyperfunctioning metastases of adenocarcinoma of the thyroid. However, most carcinomatous cells do not produce much thyroxine and take up little radioactive iodine. This material is, therefore, not of much value in most patients with carcinoma of the thyroid.

Malignant Exophthalmos.—In most patients with exophthalmic goiter the prominence of the eyes becomes grossly less when the basal metabolism is reduced to the normal level. In a few instances the prominence of the eyes continues to increase in spite of adequate control of the thyrotoxicosis. Some observers are of the opinion that this phenomenon is more apt to occur if the basal metabolism is subnormal. The exophthalmos sometimes becomes so pronounced that it is impossible to protect the eyeball by closing the lids. Increase in the prominence of the eyes in spite of a normal or subnormal metabolism indicates that the cause of the disease is still active. Exophthalmos has been produced in experimental animals with thyrotropic factor from the pituitary. Dobyns⁶ has recently described the organic changes in the orbit associated with the administration of thyrotropic factor to animals.

The treatment of malignant exophthalmos is unsatisfactory. Radical measures should be employed only when it is impossible to avoid complications with medical treatment, which includes the combined administration of iodine and desiccated thyroid and irradiation of the pituitary. Surgical relief of malignant exophthalmos involves removing part of the orbit, usually the roof and part of the lateral wall. Most surgeons are not enthusiastic about the results of surgical intervention.

THE PARATHYROIDS

Several interesting reports have appeared on the parathyroids but no really new developments have occurred. Parathyroid tetany is now a relatively infrequent complication of thyroidectomy and its treatment has been perfected. It has been clearly demonstrated that if this disorder is treated adequately as soon as it is recognized, it does not reduce life expectancy and complications such as bilateral cataracts do not develop. Small doses of dihydrotachysterol supplemented with

5. Seidlin, S. M.; Marinelli, L. D., and Oshry, E.: Radioactive Iodine Therapy: Effect on Functioning Metastases of Adenocarcinoma of the Thyroid, *J. A. M. A.* 132:838-847 (Dec. 7) 1946.

6. Dobyns, B. M.: Studies on Exophthalmos Produced by Thyrotropic Hormone: Changes Induced in Various Tissues, and Organs (Including Orbit) by Thyrotropic Hormone and Their Relationship to Exophthalmos. *Surg., Gynec. & Obst.* 82:609-617 (May) 1946.

calcium salts by mouth provide the best form of treatment. Vitamin D in large doses is also effective in promoting absorption of calcium salts from the gastrointestinal tract and may be employed in the treatment of parathyroid tetany if dihydrotachysterol is not available.

THE ADRENALS

Some progress has been made in the development of new synthetic products which substitute for the adrenal cortex. The synthetic material desoxycorticosterone acetate affects sodium and potassium metabolism but not carbohydrate metabolism. In the form of pellets implanted subcutaneously it has proved to be a fairly satisfactory method of treatment. Not all patients tolerate the material well, and in them it is necessary to use adrenal cortex extract. Other products, such as 11-dehydrocorticosterone, are not available commercially but there is reason to believe that a synthetic product will soon be available that will affect sodium, potassium and carbohydrate metabolism. Sufficient data have now been collected to demonstrate that patients with Addison's disease may be kept alive for long periods of time. They do not have much reserve and are in great danger of having serious intercurrent infections at any time.

It has been my policy to rely on adequate substitution therapy with adrenal cortex extract or desoxycorticosterone acetate. Patients periodically have crises in spite of treatment that is adequate to maintain them under most circumstances. The reason for the failure is not clear. The maintenance requirement of patients varies greatly and their susceptibility to crises also shows great variation. When pellets of desoxycorticosterone were first used in treatment it was considered necessary to determine the maintenance requirement of patients by daily injections of this material. From the figure thus obtained for maintenance purposes, the known rate of absorption of this material from each pellet and the percentage of material supposed to be eliminated unused when it was given once a day by injection, it was possible to calculate roughly the number of pellets required for the initial implantation. It is now known that this procedure is impractical because pellets from different manufacturers vary in their rate of absorption. It is common practice at the present time to implant initially in the subcutaneous areolar spaces four pellets of 75 mg. each, or a total of 300 mg. If this amount is not adequate, additional pellets are implanted in increments of 150 mg. In most patients the initial implantation does not need to exceed 450 mg., but a few require as much as 600 mg. Before implanting pellets it is necessary to determine the response of patients to the daily parenteral administration of desoxycorticosterone acetate. A few patients do not tolerate this material well. Complications of its use are the development of hypertension, edema which may be generalized and the production of focal areas of necrosis in cardiac and skeletal muscle. These areas of necrosis in the heart muscle may so impair the circulation that death results.

Some progress has been made on the site of formation of the various principles of the adrenal cortex. Androgens are apparently produced in the reticular zone, while the cells of the outer layer appear to be devoted to the control of sodium and potassium metabolism. Numerous observations have appeared on the determination of 17-ketosteroids in the urine in health

and disease. In patients with Addison's disease the production of 17-ketosteroids is low because of destruction of the glands.

THE TESTES

Hypofunction.—Observations previously reported on the treatment of hypogonadism have been extended and confirmed. Chorionic gonadotropin has proved to be a satisfactory agent for stimulation therapy and testosterone propionate for substitution therapy. Chorionic gonadotropin will produce maximum stimulation of function only when the testes are capable of showing maximum response to stimulation. Persistence of hypopituitarism for a period of several years may result in irreparable damage to the testis so that it can no longer show a maximum response to stimulation. Under these circumstances, it is necessary to use testosterone propionate in order to produce the greatest possible change. One of the most important considerations in hypogonadism beginning early in life is the correct age for starting treatment. Treatment should be started at the age at which puberty normally sets in in order to insure maximum growth of the genitalia and prevent the skeletal abnormalities associated with hypogonadism. The male sex hormone will cause growth of the genitalia at any age in patients with a pronounced deficiency but the genital growth is not as great after as during the age of puberty. The uses and misuses of testosterone propionate have been discussed in a previous communication to this journal.⁷ It is contraindicated in older men in whom the presence of carcinoma of the prostate is suspected.

Sterility.—A great deal of interest has developed on the subject of sterility. The male is sterile in infertile marriages in about 20 per cent of the patients. Stimulation of spermatogenesis in patients with secondary hypogonadism is not very satisfactory. In a few instances it is possible to cause some stimulation with some of the newer pituitary gonadotropins prepared in powder form. In determining the cause of sterility, it is advisable to investigate the male first, because it is comparatively easy to make a careful study of the production of spermatozoa.

THE OVARIES

Menstruation.—Knowledge of ovarian function has gradually increased. Rossman and Bartelmez⁸ have recently reported that few women menstruate regularly at twenty-eight day intervals. Fluctuations of one to five days are to be expected, and the twenty-eight day period occurs only once in ten times. An unusually long or short cycle may occur at any time in any normal woman. Observations on the female macaque have indicated that preovulatory and postovulatory phases of the cycle vary independently of one another and that ovulation may occur at any time in either a long or a short cycle. Sevi⁹ has also demonstrated that ovulation may occur at any time in the first half of the cycle, even during the latter part of menstruation. These observations clearly show that the calculation of the so-called safe period on the basis of the expected date of the next menstrual period is unreliable.

7. Thompson, W. O.: Uses and Abuses of the Male Sex Hormone, *J. A. M. A.* 132:185-188 (Sept. 28) 1946.

8. Rossman, J., and Bartelmez, G. W.: Delayed Ovulation: Significant Factor in Variability of the Menstrual Cycle, *Am. J. Obst. & Gynec.* 52:28-32 (July) 1946.

9. Sevi, S.: Early Ovulation, *Lancet* 2:448-450 (Sept. 28) 1946.

There has been some development in pregnancy tests, although the Friedman modification of the Aschheim-Zondek procedure continues to be the most satisfactory method for routine clinical use.

An interesting observation has been the demonstration of changes in the early morning temperature during various phases of the menstrual period. In the premenstrual phase the temperature falls one or two days before the onset of menstruation. It falls further in the menstrual phase, sometimes to as low as 97 F., and then rises to between 98 and 99 F. In the follicular phase the temperature fluctuates between 98.4 and 99 F., and in the ovulatory phase it falls suddenly, usually about the fourteenth day before the onset of the next flow. It sometimes falls to as low a level as 97 F. and then rises suddenly. The luteal phase is characterized by a sustained elevation of temperature to 100 F. or more, which persists until one or two days before the next flow. There is a slight drop in temperature in the midluteal phase, corresponding to the estrogen peak. Determinations of temperature throughout the menstrual cycle have provided a simple method of determining the time of ovulation in many women.

Abnormal Bleeding in the Treatment of the Menopause.—Bleeding from the uterus may occur at any age following estrogenic therapy. This bleeding may sometimes be prolonged and excessive, particularly following large doses of estrogens, and may be particularly dangerous in women with fibroids. All women in whom estrogenic therapy is contemplated should have a careful gynecologic examination, and the presence of fibroids or carcinoma of the cervix or fundus are contraindications to its use. When estrogen-induced bleeding occurs it can usually be controlled with rest and ergonovine maleate but in occasional instances it may be necessary to perform a curettage to control it. In a few older women with fibroids the bleeding may be so prolonged and excessive that a hysterectomy is necessary.

In the treatment of the menopause an effort should be made to administer the minimum amount of estrogenic material that will control symptoms without inducing uterine bleeding. In actual practice it is not always easy to attain this ideal. Amounts of estrogen that are inadequate to control menopausal symptoms completely may induce uterine bleeding. If patients are carefully followed, those with fibroids and carcinoma of the cervix or fundus excluded, and the smallest dosage of estrogen administered that will control symptoms, treatment of the menopause is a safe and reliable procedure. Slight spotting which occurs periodically is not serious. Treatment should be discontinued until it disappears and then resumed. In most instances, when prolonged and excessive bleeding occurs with small doses of estrogenic material, it is best to discontinue treatment permanently.

Hypogonadism Before the Menopause.—Stimulation of the ovary with various gonadotropins is not very satisfactory. Chorionic gonadotropin is not nearly as effective in the female as in the male. Pituitary gonadotropin is sometimes effective in inducing menstruation in women with secondary amenorrhea and may cause ovulation in women with anovulatory cycles. In most instances substitution therapy with estrogenic material must be employed in the treatment of hypogonadism in

the female. There is some difference of opinion concerning the most effective estrogen. For most purposes, estradiol in some suitable combination such as the benzoate or the dipropionate appears to be the most satisfactory product, but there are many estrogenic preparations on the market which produce excellent results. In the female, as in the male, the optimum time for the treatment of hypogonadism is the age of normal puberty. It is only by starting treatment at this age that maximum genital growth can be induced and skeletal disproportions prevented. The difficulty is that the diagnosis of hypogonadism early in puberty is much more difficult in the female than in the male because the development of the ovary cannot be determined as readily as the development of the testis. When hypogonadism is the result of a primary defect of the ovary, it is permanent and treatment is necessary during a large portion of the patient's life. The ideal form of treatment is the cyclic administration of estradiol and progesterone in a manner that simulates their normal production, so that periodic uterine bleeding is induced.

HORMONE ASSAYS

The time has arrived when the practice of endocrinology cannot be carried out adequately without proper laboratory facilities. For purposes of correct diagnosis and checks on therapy, it is necessary to have available facilities for determining the production of various hormones and the estimation of the concentration of various other substances in the blood and urine. The determination of the basal metabolism is also an essential of any adequate endocrine laboratory. It is important to be able to determine the production of follicle-stimulating hormone, androgens, estrogens, adrenal cortical steroids, etc. Facilities for determining the presence or absence of pregnancy (chorionic gonadotropin) are indispensable. It is essential to be able to make simple chemical tests—for example, determinations of sugar, sodium, potassium, calcium, phosphorus, phosphatase, total protein, albumin, globulin, nonprotein nitrogen, uric acid, creatine and creatinine—in blood and urine. Roentgen examination of the skeleton is essential in determining the effect of glandular abnormalities on growth. Gynecologic examination, endometrial biopsies and examination of the vaginal smear may furnish important information.

RELATION OF HORMONES TO CARCINOMA

Carcinoma of the Prostate.—A few years ago Huggins¹⁰ reported that orchiectomy sometimes produced striking improvement in patients with carcinoma of the prostate. Metastases in bone sometimes disappeared after this procedure, on the basis of roentgen examination. Huggins originally reported the results of orchiectomy in 20 patients with advanced carcinoma of the prostate. All had demonstrable metastases or local infiltration beyond the prostatic capsule. In 2 patients there was no obvious improvement from the operation. In the remainder clinical improvement was obtained for varying periods postoperatively. Eleven patients died during the first two years after orchiectomy and 4 others died within thirty-six to sixty-three months. Two deaths were the result of intercurrent infection. The median survival time for the 15 fatal

10. Huggins, C.: Prostatic Cancer Treated by Orchiectomy: Five Year Results, J. A. M. A. 131:576-581 (June 15) 1946.

cases was sixteen months, with improvement during eleven months of this period. Five patients survived more than five years after orchiectomy. Of these, 4 showed no signs of disease and 1, although apparently well, had a tumor mass in the region of the seminal vesicles. It would be premature to suggest that actual cure of the disease has been achieved in any case. Huggins and Scott¹¹ have recently reported the effects of bilateral adrenalectomy in 4 men with rapidly growing metastatic carcinoma of the prostate after orchiectomy had failed to arrest the malignant growth. Two men survived only thirty-six and fifty-four hours after complete adrenalectomy. The third patient lived eleven days and the fourth patient one hundred and sixteen days. Adrenalectomy did not appear to prolong life in these patients. The urinary 17-ketosteroids fell to a level of less than 2 mg. per day. This observation furnishes the first direct proof that the chief sources of urinary 17-ketosteroids are actually the gonads and the adrenals. The advance of the malignant process in a man with low androgenic activity suggests a factor apart from the stimulating effect of testicular and adrenal androgens. To this factor Huggins has given the name "androgen independence." Huggins has expressed the opinion that androgen may be necessary for the development of carcinoma of the prostate but that once the process is set in motion it may continue without androgenic stimulation.

Reports are appearing from various clinics on the effect of surgical castration and functional castration with estrogens in patients with carcinoma of the prostate. All observers are agreed that striking initial improvement is produced in most of the patients and most observers feel that life is prolonged. Many patients have died of carcinoma of the prostate after initial improvement. Sufficient time has not yet elapsed to determine whether castration ever produces a permanent cure. It is Huggins' opinion that bilateral orchiectomy is a more effective procedure than the administration of diethylstilbestrol.

Carcinoma of the Breast.—For years it has been known that occasionally in women with carcinoma of the breast removal of both ovaries produces some improvement. Adair and others¹² have recently reported that functional castration of women by the use of testosterone propionate in oil often produces striking clinical improvement. This improvement may consist in a decided reduction in the size of the local lesion in the breast, a decrease in the size of the metastases in the neighboring structures and an improvement in the metastatic lesion in bone.

The results are by no means as striking as those of castration in carcinoma of the prostate. It is the impression of some workers in this field that testosterone propionate is primarily of value when bony metastases are present. For reasons which are not clear at the present time, after the age of the menopause estrogens are said to produce some improvement in soft tissue metastases, whereas before the menopause they are supposed to aggravate the condition. As time has gone on, most patients have died of carcinoma of the breast. Results, while interesting, are not nearly as conclusive as those in carcinoma of the prostate.

Carcinoma of the breast may be produced by administration of estrogen in certain mice, but, up to the present time, there is no evidence that the administration of estrogenic material causes carcinoma of the breast in women. Many women have been frightened through articles appearing in the lay press implying that use of estrogenic material in the treatment of the menopause is harmful and likely to produce carcinoma of the breast. It is significant that among the large numbers of women receiving estrogens for treatment of the menopause, carcinoma of the breast is rarely noted. The danger of development of cancer of the breast can therefore scarcely be used as an argument against the treatment of the menopause with estrogen.

THE PANCREAS

No important development has recently taken place in knowledge of the internal secretion of the pancreas. The use of various insulins has been perfected and gradually more is being learned about islet cell tumors of the pancreas which produce hypoglycemia.

One interesting observation has been that by Dixon and others¹³ at the Mayo Clinic and by Ricketts, Brunschwig and Knowlton¹⁴ at the University of Chicago on the effect of total pancreatectomy in a patient with diabetes mellitus. They noted that the total insulin requirement was unaffected by this operation.

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ABSTRACT OF DISCUSSION

TREATMENT OF THE MENOPAUSE

QUESTION: What is the most satisfactory endocrinologic treatment of the menopause?

ANSWER: About 40 per cent of women have no untoward symptoms following cessation of menstruation. These women require no treatment. The remaining 60 per cent have symptoms which vary in intensity from patient to patient. In some women the symptoms are severe and include frequent hot flushes, palpitation, nervousness and various psychic disturbances such as persistent depression and paranoia. The duration of the symptoms varies from a few months to many years and the duration of treatment varies accordingly. The best method of treatment is to give the minimum amount of estrogenic material that will control symptoms. There are a variety of synthetic and natural estrogens available for this purpose. Of the synthetic estrogens, diethylstilbestrol has been used most widely. The minimum dose that will control symptoms completely varies from 0.25 mg. to 1.5 mg. daily. Most women do not require more than 0.5 mg. daily. In these doses diethylstilbestrol rarely produces toxic effects, although various claims of superiority have been put forth for other estrogens, such as dienestrol. The synthetic estrogens possess the advantage of being very effective by mouth. Of the natural estrogens the most effective probably is estradiol. It is usually given in the form of the benzoate or the dipropionate and is more effective when administered intramuscularly than when given by mouth. The minimum dose required to control symptoms varies from 1.67 mg. every two weeks to 5 mg. twice a week. It is important to carry out a careful pelvic examination before instituting estrogenic therapy for the menopause. This form of treatment is contraindicated in women with carcinoma of the cervix and in most patients with uterine fibroids. In women with fibroids excessive bleeding may start, either during estrogenic therapy or after its withdrawal. Even in women whose uterus appears to be normal prolonged and excessive

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13. Dixon, C. F.; Comfort, M. W.; Lichtman, A. L., and Benson, R. E.: Total Pancreatectomy for Carcinoma of the Pancreas in a Diabetic Person, *Arch. Surg.* 52:619-639 (June) 1946.

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bleeding may follow the prolonged administration of estrogen in large doses. Treatment should be interrupted every three or four months to determine whether it is still necessary and the patient should be followed carefully during treatment. It is probably best not to administer estrogen to any woman in whom the presence of carcinoma of the breast is suspected although it has been claimed that in women after the age of the menopause estrogenic therapy may be of some value in reducing the size of soft tissue metastases.

TREATMENT OF OBESITY

QUESTION: Are endocrine products useful in the treatment of obesity?

ANSWER: Obesity may or may not be associated with endocrine deficiencies although the presence of hypogonadism in patients with obesity is common. Desiccated thyroid may be employed in moderate doses (2 to 4 grains [0.12 to 0.25 Gm.] daily) under careful supervision to supplement a weight-reducing diet. Patients must be followed carefully during the administration of this material because in some instances symptoms of intoxication develop with small doses. Great care must be taken to avoid self medication with thyroid products. In adolescent boys suffering from the Frölich syndrome the administration of chorionic gonadotropin may produce a complete transformation without a weight-reducing diet. As a result of the stimulation of the production of the male sex hormone the muscles develop, shoulders become broader, hips narrower, and breasts and abdomen smaller. If the obesity associated with this condition is severe, it is necessary to supplement the administration of chorionic gonadotropin with the administration of a weight-reducing diet.

EXTRACTS OF ADRENAL CORTEX

QUESTION: For what conditions are extracts of adrenal cortical substances effective?

ANSWER: The most important indication for the use of adrenal cortex extract is the presence of Addison's disease. It is the only material that is effective in the treatment of a crisis of this disorder, whereas for maintenance therapy the synthetic material desoxycorticosterone acetate is preferred because of its low cost and the fact that it may be implanted subcutaneously in the form of pellets, thereby eliminating the necessity of daily injections. There are many reasons for believing that the cortex of the adrenal gland produces a material which plays an important role in the resistance of the body to trauma and infection. Administration of adrenal cortex extract has accordingly been tried in the treatment of shock, in the treatment of severe infections to supplement specific substances and in the treatment of patients who have severe reactions following surgical procedures. There are data which suggest that adrenal cortex extract is of some value in the treatment of these conditions. The cost of the material and its rather limited supply have prevented its adequate trial in conditions which have just been mentioned. In some instances the doses used have been too small to produce much improvement. In the presence of shock and overwhelming infection it is probably necessary to give the material in doses of not less than 10 cc. per hour.

RADIOACTIVE IODINE

QUESTION (Dr. Fred Kauffmann, Canton, Ohio): In what way can radioactive iodine be handled for practical purposes?

ANSWER: Radioactive iodine is not yet ready for routine clinical use. To treat patients with toxic goiter satisfactorily with this material there must be an adequate setup for measuring the dose administered and the amount of material taken up by the thyroid gland and the rate at which it disappears. The equipment necessary for this purpose is relatively expensive and its application requires specially trained personnel. Radioactive iodine has therefore been used in only a few clinics up to the present time. All radioactive material has to be handled with the greatest care because of serious consequences which may follow overexposure to the powerful rays emitted.

ABSTRACT OF DISCUSSION

The answers to the following questions were by Dr. Chester S. Keefer, Boston, whose original presentation comprised a lantern demonstration and was therefore not suitable for publication.

PENICILLIN BLOOD LEVELS

QUESTION (Dr. L. H. Hirsh, Milwaukee): What is the relation of blood levels to tissue levels in use of penicillin?

ANSWER: Penicillin diffuses into red blood cells in about 10 per cent of the concentration of that in the plasma. Very small amounts diffuse into the cerebrospinal fluid, even after large intramuscular or intravenous injections of penicillin. Penicillin can be found in pericardial, peritoneal, pleural, joint and edema fluid. The concentration in general is lower than that found in the blood at the same time. Little, if any, diffuses into the tears or saliva, or the pancreatic juice or the milk. It passes through the placenta from mother to infant. The amount present in placental cord blood is approximately 40 per cent of that found in maternal serum. It has also been ascertained that penicillin diffuses into the kidney, small intestine, lung, buccal mucosa, bile, skin, liver, adrenal glands, pancreas, heart, voluntary muscle and spleen. Practically none is found in the brain and bone marrow, even one hour after intravenous injection of fairly large doses. The dura mater, cornea, lens and vitreous humor contain no penicillin, and nerve tissue only traces. In brief, penicillin diffuses into various organs of the body in much lower concentration than that found in the plasma.

PENICILLINASE

QUESTION (Dr. A. C. Worley, Fort Wayne, Ind.): Do body cells develop penicillinase? If so, how long does resistance last?

ANSWER: There is no evidence that the body cells develop penicillinase. Penicillin is not inactivated by any of the body fluids, pus or necrotic tissue. Some bacteria, notably the *Staphylococcus* and the gram-negative bacilli, may produce penicillinase.

MIXTURES OF ANTIBIOTICS

QUESTION: Can streptomycin and penicillin be mixed in the same syringe?

ANSWER: Yes, there is no contraindication to mixing the two together for simultaneous injection.

BACITRACIN

QUESTION: Are there any new effective antibiotics?

ANSWER: The only new antibiotic that has been investigated on a limited scale is bacitracin. Dr. Meleney and his associates have used bacitracin locally for the treatment of infected wounds. It has the same general scope, as far as bacteria are concerned, as penicillin.

TREATMENT OF ORDINARY SORE THROAT

QUESTION: Do you think it advisable to treat ordinary sore throat with penicillin and/or sulfonamide drugs?

ANSWER: Yes. Most instances of sore throat are due to hemolytic streptococcus infection. Penicillin and/or the sulfonamide drugs can prevent suppurative complications and reduce the total number of days of illness.

STREPTOMYCIN NOT INFECTIOUS

QUESTION (Dr. Erling S. Wedding, Brooklyn): Have any strains of streptomycin ever been demonstrated to be pathogenic to man or experimental animals?

ANSWER: I do not know of any cases in which *Streptomyces griseus* has been responsible for infection in man.

ABSCESS OF THE LUNG

QUESTION (Dr. William Klein, New Brunswick, N. J.): Have you found a greater incidence of pulmonary abscesses following the use of penicillin in pneumonias?

ANSWER: From a study of the large number of cases reported to the Committee on Chemotherapeutic and Other

Agents of the National Research Council, there is no evidence that the use of penicillin in the treatment of pneumonias is followed by a larger number of pulmonary abscesses.

ORAL PENICILLIN

QUESTION (Dr. Charles P. Ryland, Washington, D. C.): Please discuss the efficacy of penicillin orally.

ANSWER: At least three to five times as much penicillin should be given by mouth as is given parenterally. It has been found to be extremely effective in the treatment of pneumococcus pneumonia, gonococcal urethritis, hemolytic Streptococcus infections of the throat and pharynx, and other mild or moderately severe infections that respond to penicillin.

STREPTOMYCIN TIME-DOSE RELATIONSHIP

QUESTION (Dr. Belle Jacobson, New Rochelle, N. Y.): Is it necessary to give streptomycin every three hours in the treatment of tuberculous meningitis?

ANSWER: There is not enough information available concerning time-dose relationships to make any precise statement concerning the time interval between the injections of streptomycin in the treatment of tuberculous meningitis. It is not unlikely that injections every six hours throughout the day will be adequate, for the reason that streptomycin is excreted by the kidney much more slowly than is penicillin.

UNDULANT FEVER

QUESTION (Dr. P. Blair Ellsworth, Idaho Falls, Idaho): What is the latest treatment for undulant fever?

ANSWER: The best results that have been reported in the treatment of undulant fever, particularly the early cases—that is to say, patients who have been ill for less than two weeks—have been from the combination of sulfadiazine and streptomycin. Streptomycin should be continued for at least four weeks in amounts of at least 2 Gm. a day; sulfadiazine should be continued for a similar period of time, depending on the reaction of the patient. In the chronic cases of undulant fever, the evidence is far from convincing that any of the chemotherapeutic agents are responsible in shortening the course of the disease.

INTRASPINAL INJECTIONS

QUESTION (Dr. George Vryonis, Alexandria, La.): What dilutions of penicillin and streptomycin should be used in intraspinal injections? What undesirable results may follow?

ANSWER: Penicillin should be diluted so that not more than 1,000 to 2,000 units per cubic centimeter of isotonic solution of sodium chloride are used. The maximum dose should be not more than 25,000 to 50,000 units in a twenty-four hour period. For streptomycin, the maximum dose in a twenty-four hour period should be 50 to 100 mg., diluted in 10 to 20 cc. of isotonic solution of sodium chloride. With low dilutions and a volume of solution that is equal to that which has been withdrawn after lumbar puncture, there are usually no undesirable effects. If on the other hand, one uses high concentrations and small amounts, headaches, meningismus and, rarely, convulsions may follow.

PERTUSSIS

QUESTION (Dr. Benjamin Feldstein, New York): Is streptomycin of value in the treatment of pertussis?

ANSWER: So few patients with pertussis have been treated with streptomycin that it is impossible to answer this question with certainty. A few patients with pertussis associated with pneumonia and fever have been treated with streptomycin with striking results. There are several studies under way at present, so that more information concerning the value of streptomycin in pertussis will be forthcoming.

COMBINED INJECTIONS

QUESTION (Dr. H. H. Schuman, Springfield, Mass.): Is there any contraindication to using both penicillin and streptomycin in a single combined injection?

ANSWER: There is no contraindication to using both substances in a single combined injection. They should both be made up freshly before injection.

TOLERANCE TO PENICILLIN

QUESTION (Dr. A. I. Rosenblum, Chicago): What is the present status regarding the development of tolerance to penicillin following repeated uses for different diseases?

ANSWER: There is no evidence that the use of penicillin repeatedly builds up a tolerance on the part of the patient to its effective use when infections occur.

DISTILLED WATER OR SALINE SOLUTION

QUESTION (Dr. L. C. Moeris, Chicago): Is it desirable to administer streptomycin in distilled water rather than in saline solution?

ANSWER: Streptomycin may be administered either in distilled water or in saline solution. There is some evidence that mixing streptomycin with isotonic solution of sodium chloride decreases its activity. This has been demonstrated in vitro, but so far there is no evidence that using streptomycin in saline solution for the treatment of infections in man has decreased its potency.

PROPHYLAXIS OF RHEUMATIC FEVER

QUESTION (Dr. J. L. Hrdina, Cicero, Ill.): Do you recommend the daily oral use of penicillin in the prophylaxis of rheumatic fever for long periods, say two to four years' continuous use?

ANSWER: No one has had any experience with the daily oral use of penicillin for two to four years continuously. There is some evidence, based on experience over the last two years, that penicillin given in amounts of 50,000 units twice daily will prevent Streptococcus sore throat when patients are under carefully controlled conditions. In this way the incidence of the recurrence of rheumatic fever may be reduced.

LEGAL LIABILITY

QUESTION: What legal liability can a physician incur at this time, knowing the possible permanent disabilities the patient will incur with the use of streptomycin?

ANSWER: I do not know. This is a matter that should be taken up with legal counsel in order to get a specific opinion.

ALLERGIC REACTIONS

QUESTION: I suggest a plea for more accurate reports on the allergic reactions following the injection of penicillin in wax and peanut oil. The incidence seems higher than 5 per cent and the distress to patient and physician much higher than 50 per cent. Can a different menstruum be made?

ANSWER: No menstruum has been developed other than peanut oil and white wax for adequately delaying the absorption of penicillin from local deposits. In a controlled series of cases studied by Dr. Harry Dowling in Washington, D. C., the incidence of allergic reactions following the injection of penicillin in oil and wax was 5 per cent. This is a personal communication from the investigator.

ANTIBIOTICS AND THE COMMON COLD

QUESTION: Is it worth while to give antibiotics in the treatment of the common cold or influenza?

ANSWER: There is no evidence that any of the antibiotics influence the course of influenza or the common cold.

A Vaccination Record.—In less than a month more than 6,300,000 people were vaccinated in New York City, over 5,000,000 of them within the two week period following the appeal for universal vaccination made by the Mayor. Never before had so many people in one city been vaccinated in such a short time and on such short notice. Thanks are due to the press and radio for giving so generously of their space and time to bring necessary information to the public. Had it not been for them and for the intelligent cooperation of the public and the generosity of private physicians and volunteer workers, notably from the American Red Cross and the American Women's Voluntary Services and former Air Raid Warden groups, it would have been impossible to have achieved this remarkable record.—Weinstein, Israel, M.D., An Outbreak of Smallpox in New York City, *American Journal of Public Health*, November, 1947.

Special Article

FOODS FOR EMERGENCIES

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"Our difficulties will be greatly lessened if we have a long-range food policy which will ensure that during the war and the postwar period, however poor the nation or part of the nation may be, every family will be assured of sufficient food to maintain them in health."—Sir John Orr and David Lubbock, *Feeding the People in War Time*, London, Macmillan & Co., Ltd., 1940.

Writing in 1942 on the subject "Unusual Foods of High Nutritive Value," we urged reevaluation of supplies of food, with emphasis on a number of resources which theretofore had not been tapped extensively and which warranted more consideration in developing plans for feeding populations for which supplies of food were limited. The undernutrition of hundreds of millions of the European population precipitated by the war and scarcely arrested, if at all, since the ending of hostilities, prompts reiteration of this subject. Also a number of the foods which we considered in our previous paper have assumed immense importance in many of the war-torn countries, and some account of this experience is now available for review.

Two general observations relate to this experience; each of them has been repeatedly affirmed. The first is that starvation in the European countries, bad as it has been, has everywhere been less than was anticipated from estimates of food supplies available. The second is that deficiencies of specific nutrients and especially deficiencies of vitamins have been relatively inconspicuous. The reasons include the fact that persons who are undernourished compensate to some extent by curtailing their activities. Children are less active in their play, and the work output of adults falls unconsciously. The growth of children is retarded. Likewise with subnutrition goes depression of basal energy exchange; in starvation the basal metabolic rate may be as low as minus 40, which represents a physiologic adjustment. The need for calories is restricted by these means, and loss of weight lags behind what would be expected were judgment limited to knowledge of the calories available. Also in consequence of diminished expenditure of energy the requirement for several nutrients is lessened and the appearance of signs of gross deficiency, either of vitamins or protein, is postponed. However, there is yet another reason for discrepancies between the loss of body weight anticipated and that observed. This, namely, has been the ability of starving populations to supplement their diets with edibles which are not included in customary estimates of food supplies. Thus some extra calories are obtained, and in addition, as a rule, the unusual foods consumed are often good or even excellent sources of minerals and vitamins. Thereby the diet as a whole in many European countries, although inadequate with respect to calories and providing much less animal protein and less fat than is desirable, has been relatively improved in certain

instances with respect to minerals and vitamins. Exceptions have been noted. In Spain, where for many people the staple foods were white bread and polished rice, the number of cases of mental and nervous disorders attributed to deficiency of B vitamins is reported to have increased greatly, in contrast to experience in Leningrad and Stalingrad, where hundreds of thousands died of starvation, but vitamin deficiency was not apparent.

We made comment in our previous paper that the diets of primitive populations, with food selection limited to unsophisticated foods, compared most favorably with the diets of those nations which are most advanced in general culture and whose people have certain silly notions about what is fit for food. Primitive man was constantly in danger of starvation from inadequate supplies of food, but the foods which he obtained from his natural environment were relatively rich in vitamins, in minerals and in protein. A happy custom of primitive man was to eat the entire carcass of his kill, including the intestine, which with the organ meats, notably the liver, was rich in vitamins. He ate these morsels first by preference, he drank the animal's blood, he was none too squeamish in his taste for fish, but took whatever he could catch and ate it whole. Snakes and rodents were delicacies, and insects, termites and the like, all rich in nutrients of the highest value, were quite acceptable. Wild fruits and vegetables were consumed either fresh as found or after a minimal period of storage. Later, with the development of agriculture, the cereal grains came into use, but so long as milling methods remained primitive these provided much more nutrient material than is obtainable from the highly processed cereals of modern mills.

The inhabitants of the European countries overrun by Germany reverted so far as they were able to the food ways of primitive people. Many products which in normal times were not considered fit for human use have been found acceptable in this time of need. The wheat and other grains available were ground whole for human use or milled to high rates of extraction, whereby, for example, from 100 parts of wheat from 85 to 100 parts of flour are produced, as compared to the 65 to 72 parts of flour yielded as white flour by the modern flour mill. No skim milk was allowed to go to waste, and the whey obtained from making cheese was utilized for food. Organ meats were cherished and in places even the blood of slaughterhouse animals was consumed. The populations of Europe were handicapped in this reversion to more primitive food ways by ingrained habits, by taboos, by lack of ingenuity and by numbers. The natural food environment of Europe may have provided enough in primitive times, but it falls far short of being ample for a population like that of modern Europe. Nevertheless, something could be done to eke out meager rations, and what was obtained by these and other means helped to alleviate the worst effects of famine.

"The bread is dark and soggy, made of several kinds of coarse grain," reads one report. Other than the rationed foods, and they provided only 1,500 calories daily, people could "buy" sea gulls, crows and strange fish which formerly were considered unfit for human consumption. Meat had disappeared, even horse meat. The women and children scoured the fields and roadsides for edible plants. The forests were finecombed for mushrooms and berries. Dandelions, nettles, acorns, leaves and nuts all had their uses. Every little plot of ground, even every window box, became a victory garden. That was in Norway. In Holland, tulip bulbs

and sugar beets were consumed as food. Both caused diarrhea when taken in large amount. Rhubarb leaves proved toxic. The same was true of beechnuts. Thus at times more harm than good resulted from the practice of foraging. In Germany, in the spring of 1947, when coarse bread was made from high extraction flour, this bread and potatoes were the foods principally responsible for a nutritional situation which otherwise would have been more serious than should have been expected from the ration. The diet largely consisted of bread and potatoes with a few beans and peas, a bit of cheese and a few onions. The fat allowance was 9 Gm. a day for adults. The weekly meat allowance was usually consumed at one meal.

EDIBLE WILD PLANTS

Weeds and other plants have been used as food by every famished population. The varieties available in Belgium were described by Hermans. The Russians resorted to cooking inedible greens to make a paste rich in carotene. This was eaten as a spread on bread. Sources of vitamin C were short in many countries. In England as well as on the Continent rose hips were collected and reduced to syrup or jelly. Pomegranate boiled and concentrated was used in Russia. Germinating grains have long been known to be a source of ascorbic acid. United States soldiers in the Pacific area were given a manual issued by the War Department which illustrated and described both edible and poisonous plants. It was intended as a guide for soldiers separated from their units and dependent on foraging for their survival. The manual covered all Polynesia, Micronesia, Melanesia, the Malay Peninsula and the Philippines. For practical purposes it also covered Indo-China, Thailand, Burma and Eastern Asia. An astonishing number of herbs, ferns, palms, grasses, tuber seeds and fruits were described as being edible and nutritious.

Issued in 1943 by the Office of War Information of the United States government was a list of edible weeds with directions for their preparation. Mentioned were dandelion, lamb's quarters, plantain, poke, purslane, wild chickory and dock. Some of these are to be found in every vacant lot and on other neglected ground. Others grow abundantly along roadsides and hedges or by streams and in the woods. A leaflet containing similar information was distributed by the New York Department of Health. Mentioned in it were milkweed, stinging nettle, summer mustard and sorrel. Mentioned also in a reference was a book entitled "Weeds" by W. C. Muenscher.

Among the edibles in nature which in emergencies can serve as food is the acorn, which held a place of importance in the diet of the American aborigine. After parching over coals the meat is sweet and palatable. It may be powdered to make a flour. Many wild plants served the Indians and early settlers of America. Among those noted by Carr are the tuberous roots of the catbrier or greenbrier (*Smilax*), the roots of the common cattail, the bulb of the sago lily and persimmons and poke weed.

'KITCHEN GARDENS

The kitchen garden has made an important contribution through these recent years of shortages of food in Europe, and gardens in America have helped to supplement the diet here and thus to release less perishable foods for export. Greater savings of food for export can be made by avoidance of waste, not only

waste of food itself but loss of the nutrients in foods during their handling and preparation in the kitchen. Efforts to teach this lesson during the war were not without effect. The problem is of supreme importance but not a part of the subject of this paper. By its national gardening program the Department of Agriculture is encouraging the continuation of the wartime garden program. City planners are encouraged to provide small garden plots for use by urban dwellers. Not only is the contribution of fresh food from the garden of the greatest value in nutrition, because fresh foods contain vitamins some part of which is lost when the foods are shipped to distant markets, but from the gourmet's point of view fresh foods contribute greatly to the attractiveness of the meal. No tomato tastes as good as one just picked, no lettuce, no sweet corn, no peas or green beans, no strawberries or melons can compare with those grown in one's own garden. Also the variety of food that can be made available is much greater than can be found in local markets. Millions of city and suburban dwellers with no previous experience became skilful gardeners in the war years and learned that gardens pay in increased health and satisfaction. Also many persons for the first time in their lives learned to eat these wholesome foods.

In England in the war the Ministry of Food allotted land from parks and other open spaces and provided blueprints for the gardens. The allotments were "10 perches" in size, a plot of about 300 square yards, say 30 by 90 feet (9.1 by 27.4 meters). A study of ninety-eight of these allotments showed an average production in one year of 411 pounds (186.4 Kg.) of potatoes and 1,088 pounds (493.5 Kg.) of other vegetables. The plan involved successive plantings, so that in the English climate it was possible to obtain a fairly even supply of products over the year. The amount was sufficient to meet the requirements for vitamins C and A for a family of five and to add importantly to the supply of other nutrients and calories.

POTATOES

Of all the vegetables, however, the one which aided most in the support of human life in war-torn Europe was the white or Irish potato. The Ministry of Foods in England guaranteed the growers a price for all surplus potatoes. Their distribution was well controlled and they contributed to the calories of the diet even more importantly than wheat. Drummond called bread and potatoes "buffer energy foods" because at the height of rationing in the United Kingdom they remained in adequate supply, unrationed, to serve as buffers for diets which otherwise would have been too low in calories.

The potato thus is properly regarded as a food of great value in emergencies. Unfortunately, the crop is not entirely dependable, and when great reliance has been placed on it failure of the crop has resulted in widespread famine. Another problem with potatoes is the high water content and thus the cost of transportation. This has limited the usefulness of potatoes for relief feeding abroad. The ocean freight alone is enough greater than that of flour so that flour at a cost of 6 cents a pound (13.2 cents a kilogram) has been less expensive than potatoes delivered free of charge to United States ports. Potatoes, furthermore, are sensitive to freezing. Great losses occurred in storage in Europe in the cold weather of 1942-1943.

For the several reasons mentioned it would seem to be desirable to provide for large scale processing of potato crops. Dehydration is a possibility, but is relatively expensive. Potato flour can be made rather inexpensively and has been reported as selling in a competitive market at only 8 cents a pound (17.6 cents a kilogram) which puts it in a class with wheat flour. Uses for potato flour should be thoroughly explored. Its admixture with wheat flour in making bread is a long-established practice, although little used since World War I. Many other uses could be found. Potatoes when properly prepared for eating make important contributions to the ascorbic acid content of the diet. Potato flour probably contains no ascorbic acid, but this difficulty could readily be corrected by suitable fortification. The nicotinic acid and thiamine of potatoes are presumably retained in processing to flour. Only about 40 per cent of the nitrogenous substance of potato is protein. The balance consists of amides, amino acids and purines; yet the biologic value in nutrition, although less than that of casein, is said to be superior to that of the combined nitrogenous substance of wheat, of which 90 per cent consists of protein. The principal protein in potato (tuberin) is not superior in value to the proteins of wheat, from which Chick and Cutting have concluded that some portion of the non-protein nitrogenous material must be utilized as protein.

PROTEIN RESOURCES

Shortage of protein of good biologic quality has been serious in many parts of Europe as well as in the Far East.

Blood.—In the winter of 1944-1945 plasma obtained from slaughterhouse blood played a part in Amsterdam in the treatment of famine edema. A pediatrician was the first to call for it. He wanted it for children in the 6 to 14 year age group, in which the mortality rate had risen rapidly from the time that supplies of rationed milk had been suspended. Two butchers were placed under supervision for the preparation of this plasma. Soon thereafter general practitioners began to use the product for patients with hunger edema. Benefit was observed with as little as 500 cc. per week. The fact that a dose of 6 Gm. of animal protein a day, which was all that this provided, was lifesaving led to the conclusion that lack of certain essential amino acids in the almost entirely vegetable diet had been responsible for the edema and for increased mortalities. The demand for the plasma increased so much that all slaughterhouse blood was used for this purpose. It was fed at first cooked in pancakes, later as bouillon or in brown bean soup. Whole blood, incorporated in sausage (Blutwurst), which had been consumed before in parts of Europe, was not acceptable in Amsterdam. Physicians, however, prescribed it for anemia. In Russia and in parts of Germany, whole blood was used in bread. In Switzerland, a mixture of potato and blood was recommended.

Fish.—The normal catch of fish by European fishermen was seriously diminished while war lasted, owing mainly to confiscation of trawlers and other fishing boats for wartime purposes. Fishing now is being stimulated by every means available in order to increase the supplies of protein. Unfortunately, only a relatively small proportion of the normal catch of fish is at present utilized for food. The balance is diverted to fishmeal fertilizer or is thrown away. The protein of this waste was separated by Deuel for study of its biologic activity. It equaled casein in potency for

regenerating plasma protein in animals made hypoproteinemic by exsanguination.

In addition to their value as a source of protein, small fish offer the advantage of containing edible bones, thus serving as a source of calcium. A report from India by Basu and his associates contained the account of a study of calcium balance made on human subjects who were given small whole fish as the only source of calcium. A daily intake of 70 Gm. maintained a positive balance. Calcium deficiency is prevalent in the rice eaters of Bengal and other parts of India where milk is not obtainable, and an active interest in this matter is apparent from numerous studies reported in the scientific literature of India. Aykroyd, in a consideration of Indian diets, pointed to the fact that India of necessity must be self contained as regards food supply and that the existing relation between population and the land necessitates a national diet composed of foods giving a high calorie return for each unit of the land. Attempts to increase the production of foods not falling within this category, foods such as milk or meat, present great difficulties. Adolph, writing on conditions in China before the war, made the comment that vegetarian people are usually vegetarian not because of dietetic whims but for economic reasons. The equilibrium between food supply and population is so delicate that disturbance of the status quo may be at once reflected either in emigration or in a mounting death rate from starvation. Cereals and legumes provide some 88 per cent of the calories consumed in China. This type of situation seems to us to call for great expansion of the fisheries, with due attention paid to Deuel's suggestion for more economy in the utilization of the catch. It can be maintained that an increase of the food supply in the Orient would only lead to further increase of the population. Our suggestion here, however, is not so much an increase of the total calories, but rather an improvement in the quality of the diet.

The amount of animal protein obtainable from the sea is almost limitless. Areas in which life is of unusual abundance are the North Sea, the Norwegian Sea, the waters around Newfoundland and off many of the coasts of all the continents. The yield of coastal waters can be increased by fertilizing. This was shown, for instance, by an experiment in Scotland. An inland lock or bay of salt water with an area of about eighteen acres and an average depth of 2 meters was fertilized with so little as 600 pounds (272.2 Kg.) of sodium nitrate and 400 pounds (181.4 Kg.) of superphosphate. A neighboring lock received no fertilizer. There was an immediate rise in the vegetation of the fertilized lock to three to four times the original amount and the growth of fish leaped upward. Baby flounders grew in thirteen months to a size equal to that of two or three years' growth in the North Sea, itself a rich feeding ground.

We mentioned in our earlier paper the carp culture of German inland lakes. The fish farms of Central Europe produce as much as 500 pounds (226.8 Kg.) of fish per acre, which has been compared to the 200 pounds (90.7 Kg.) of beef or mutton obtainable from pasture land of quality. A bulletin of the Department of Agriculture explains how to manage farm fishponds for food production.

Soy Beans, Peanuts, Wheat Germ and Corn Germ.—Protein of relatively high biologic value is provided by beans and peas. Early in the emergency created by the war, production goals for soy beans were raised for

two important purposes, (1) for the oil to replace the diminishing supply of fat and (2) as a source of protein. The protein of soy beans is excellent with respect to all of the essential amino acids except cystine. The same, indeed, is true of common beans. But since wheat flour contains cystine, the use of beans with bread, or better still of baked beans and brown bread, provides a source of protein which is adequate. The vitamin values of the soy bean compare favorably with those of meat; the choline content is higher than that in leafy vegetable roots and grains. In the war soy bean flour that was free of fat found a ready outlet for some purposes, notably in doughnut manufacture. Its widespread household use, however, lagged far behind what had been desired. Milk made from soy beans has proved its usefulness especially for the feeding of children and invalids in regions of the world, especially in China, Thailand and India, where other milk is unavailable. A cookbook devoted entirely to the soy bean contains precise directions and a large group of recipes for using both the garden type of soy bean and the flour prepared from field beans.

The peanut crop was also much expanded in the war years. In this instance consumer acceptance was more satisfactory. Sherman has pointed out that beans, peas, peanuts and soy beans could assume a considerably larger part in the human diet with nutritional as well as agricultural advantage.

Wheat germ and corn germ customarily diverted to animal feeding by the millers of flour and degerminated corn meal represent a source of protein of high biologic quality that is of more importance than has been assumed. It is estimated that some 150,000,000 pounds (68,038,800 Kg.) of wheat germ and 600,000,000 pounds (272,155,000 Kg.) of corn germ might be made available for human consumption in this country. The total amount has been compared to the 500,000,000 pounds (226,796,000 Kg.) of skim milk powder produced in 1941.

Another source not only of a protein reputedly excellent in biologic quality but also of fat is the sunflower seed. The nutritive value of sunflower seed has long been recognized, especially in Russia, where great quantities are consumed. Sunflower grows in almost any soil and its cultivation might be increased with advantage in many countries.

Yeast.—An almost limitless potential source of protein of relatively high nutritive value is yeast. Mention was made of yeast in our earlier paper, but more information is now available because extensive effort was directed toward its development in the war years. Production of yeast for food was undertaken in this country, in Germany, in England, in Jamaica and in Puerto Rico. Food yeast was grown under primitive conditions and used apparently with great advantage in an internment camp in Java. Yeast requires sugar for its growth, likewise a source of nitrogen. For the latter, ammonia will suffice. In the camp in Java, a diastase was obtained by growing mold on corn and with this diastase sugar was produced from starch wastes such as old inedible potatoes. For the source of nitrogen, spoiled fish and spoiled meat were used, and when the amounts of these proved insufficient, ammonia was distilled from urine. The weekly yield of food yeast amounted to more than 60 Kg., an amount significant as a supplement to the meager diet provided by the Japanese. In Puerto Rico, surplus molasses was the culture medium, with urea obtained from sewage supplying the nitrogen. In Germany,

yeast was cultured on wood sugar in amounts said to have exceeded 100,000 tons a year.

The protein of yeast has been found to be deficient in the sulfur-containing amino acids methionine and cystine; however, methionine may not be required by man if his diet contains cystine. Cystine is contained in the protein of rice or wheat, and either rice or wheat flour usually constitutes a large part of the diets of people obtaining little animal protein. Deficiency of yeast in sulfur-containing amino acids, therefore, may not represent a serious disadvantage to the use of yeast. The studies in Puerto Rico supported the opinion that the protein of food yeast (*Torula*) is lower in biologic value and hence lower in net protein value than that of dried brewers' yeast, and yet as good as that of soy flour and much superior to that of navy beans, rolled oats, whole wheat flour and whole corn. A purified yeast protein obtained in Germany by treatment of yeast with alkali and subsequent precipitation with acid alcohol was found effective in maintaining nitrogen balance in experiments on man, white rats and hogs.

Approximately 10 per cent of the total nitrogen of yeast is nonprotein nitrogen, a relatively large part of which is present in the form of purines, and the effect of this when yeast is used in human nutrition appears not as yet to have been fully explored. Large daily doses (130 Gm.) increased the concentration of uric acid in the blood and urine. On the other hand, relatively smaller amounts did not have these effects. An amount of yeast as small as 10 Gm. daily, to judge from studies made by Sure with rats, may be of value as a supplement to the proteins of white flour or white rice. It is possible that further experiments will lead to the development of food yeasts which contain less purines. Numerous methods have been developed for incorporating yeast in breads, soups and other foods. The greatest need for food yeast would appear to be in India, in China and in the tropics where population pressure on the land or economic conditions or both are great enough to make impossible provision of enough meat and milk to supply the population with protein of high biologic quality. The cost of yeast is small, and addition of it in amounts not more than 3 per cent might help enormously when diets are strictly vegetarian.

Cultures of other micro-organisms may serve as protein food for man. *Fusarium lini* Bolley with a supplement of thiamine provided adequate amounts of the B complex vitamins for the normal growth, reproduction and lactation of mice. Fed to mice as the only source of protein at a 15 per cent protein level, growth was as satisfactory as with 18 per cent of casein. The possibilities as foods of this *Fusarium* and related molds appeared to Vinson and his colleagues to be important, for they can be easily grown in the course of the alcoholic fermentation of the 6 and 5 carbon atom sugars present in wood hydrolysates, sulfite waste liquors and silage.

FOODS FOR RELIEF

Foods best adapted for stockpiling or for shipping to areas in need of relief must be relatively imperishable and largely free from water. In the emergency of any war or major social turmoil, transportation at once becomes a problem of immense importance. Freight cars and ships in wartime are in great demand for moving troops and military stores, and the facilities that can be obtained for moving food are rarely ever adequate to meet requirements fully. Moreover, transportation is peculiarly sensitive to enemy attack. In-

Germany, near the war's end and later in the occupation period, collapse of transportation contributed as much or more to famine as did shortage of the total food supply. White flour, white rice, degerminated corn, sugar and fats and oils best meet requirements for stockpiling and shipping. They, however, for the most part are poor providers of minerals, vitamins and the better proteins. Among foods best suited to supply these factors are cheese, dried beans, dried peas and dehydrated (or for certain purposes canned) milk, eggs, meat and fish.

Canned food has played a role in every recent war, but never a greater one than in the war just passed. Its contribution to maintaining the nutrition both of the military and civilian populations of this country and of our allies was tremendous. Canned milk, canned meat, canned fish and great varieties of canned vegetables and fruits were shipped to all parts of the world in quantities as large as means of transportation would permit. From the standpoint of imperishability and good nutritional quality, foods preserved by modern canning methods rank among the best. They also lend themselves to stockpiling. Their only disadvantage is that their weight and bulkiness complicate their transportation.

Dehydration as a means of saving shipping space represented a major contribution in solving the problem of providing Britain with food enough to keep its people fed in World War II. In the years before the war about 3,000,000 tons of water were imported into Britain. This was contained in the food that came from overseas. Much of that wasted effort was overcome by shipping foods from which the water in large part had been removed. Eggs were dried. Before the war British imports included 2,000,000,000 eggs, of which 75 per cent (or 100,000 tons) was water. Fresh meat for transport overseas called for refrigerated ships, whereas dried meats could go in any kind of boat. Dried soups were shipped in quantity. Cheese and butterfat were in great demand as shipping items, since they were relatively free of water. Powdered egg was produced and shipped in enormous quantities. It proved unsatisfactory until methods were developed which insured good solubility. With the better products which eventually were provided, omelets, cakes and custards could be made which equalled those prepared with fresh eggs. However, the most important items in this category were evaporated milk and dried skim milk.

Milk.—Wherever liquid milk can be obtained it represents a most acceptable and satisfactory means for obtaining protein of high biologic quality. Goat's milk possesses about the same nutritive properties as cow's milk, but goats can thrive in rocky country where cows do poorly. In such places raising goats for local consumption of their milk and meat has been encouraged. Fluid milk, however, because of bulk and perishability, is expensive to transport to distant regions. The handicap is largely overcome by processing before shipment. Evaporated milk, dried milk and many forms of cheese are relatively imperishable, occupy relatively little shipping space and compared to fluid milk can be delivered to a distant market at a relatively low cost.

Dry milk, either dry whole milk or dry skim milk, has come to play a part of great importance in feeding undernourished people. Its value in the treatment of the famished inmates of Nazi concentration camps was discussed by Pollack. It is excellently suited for constructing diets high in protein. For this purpose it can be mixed with other foods in large proportions or

made into a paste by adding 1 part of dry milk powder to 2 parts of water. Whole liquid milk or buttermilk or orange juice may be used as the diluent. Flavoring can be added if desired, and added egg or powdered egg gives the mixture a custard character with additional nutritional advantages. With these products now becoming available there is little need for any of the various protein concentrates of fancy composition appearing in the drug trade or for the protein hydrolysates which recently have been promoted for oral use. There is little evidence that any of these products are absorbed more readily than milk even when digestion is impaired. Their cost is out of sight and the atrocious palatability of protein hydrolysates makes them unacceptable even when administered by stomach tube.

Among milk products of great usefulness as a source of protein in the war was cheese, which rivals any food available as a source of protein, is relatively imperishable and lends itself to shipping. Very large amounts of American cheddar cheese have been exported and production in this country has increased accordingly. American or cheddar cheese has represented about 80 per cent of a total cheese production, which now is said to utilize annually about 10,000,000,000 pounds of milk. An economic as well as dietary objection to converting milk to cheese is the loss of whey, which contains the lactalbumin of the milk, some of its mineral and much of its vitamin content. Uses for whey have been difficult to develop, and to waste this highly nutritious material is well-nigh criminal. Whey can be dried to powder and used advantageously in bread making much as has been done with dry skim milk. It also can be used in candy manufacture, but other outlets ought to be explored.

FATS AND OILS

A major problem in all the war-torn countries, and not without real significance in North America, was the shortage of fats occasioned by the war. This developed from two causes: (1) the interruption of imports of coconut, palm and other oils from the Pacific islands, and (2) the demand for oil and fat for war use.

While the evidence for a minimal fat requirement is inconclusive, the opinion prevails that 20 to 25 per cent of the total calories should come from fat. Half of this total usually should be obtained in a visible form as butter, lard and oil. The total would amount to from 54 to 68 pounds (24.5 to 30.8 Kg.) per year, whereas the per capita prewar consumption in the United States was 93 pounds (42.2 Kg.). The principal sources of invisible fat are dairy products other than butter, meat, nuts and eggs. The supply of them as well as the supply of fats and oils has been short in Europe since the war began. Much could have been done to alleviate postwar shortage of fat in Europe had the United States adopted a more enlightened program for its use of fats and oils during the war years. Because of their relative imperishability fats and oils can be stockpiled over years. However, such a program involved restriction of the use of fat for soap and for military purposes, and resistance was strong enough to prevent any such restrictions.

FOOD MANAGEMENT

The successful prosecution of World War II depended to a large extent on the herculean efforts of farmers and other food producers in the United States and Canada. Blessed by successive years of better than average growing weather, food production was increased almost a third and much of the increase became available for

export. A further vital contribution involved measures that were introduced for managing distribution, "set-asides" of food commodities, price control and differential rationing. This is not the place for discussion of food management over the world. In due time the story will be told by the Food Research Institute of Stanford University, which has received a large grant of money from the Rockefeller Foundation for a five year study of the subject. Some account of procedure in the United States has been given by Hendrickson and by Clayton and Black. An account of procedure in Canada has been published under the authority of the Minister of National Health and Welfare. The experience of Switzerland has been reported in a recent monograph by Fleisch, and separately under the auspices of the Food Research Institute by Rosen.

By careful management of their food supplies the Swiss and British came through the war without deterioration, and indeed in many respects with actual improvement of the public health. Sir William Jameson, British Minister of Health, could state in 1946 that infant mortality rates and puerperal death rates had fallen steadily. The problem of nutrition in Great Britain received interesting consideration in a recent book by Cruickshank. In Switzerland, despite lowering of food supplies and shortages of protein and fat, the heights and weights of children were maintained. The incidence of most reportable infectious diseases was diminished, as was that of diseases of the gastrointestinal tract, including appendicitis.

SUMMARY AND CONCLUSIONS

For populations in the path and in the wake of war, finding food becomes a matter of supreme importance. By utilizing edibles which in normal times are disregarded, much can be done to alleviate or postpone the worst effects of famine. Substantial contributions to the family larder can be made by gardening. By these means sufficient vitamins and minerals are usually obtainable. The pressing problems, then, relate to calories and biologically superior protein. Cereal grains, wheat, corn, barley, oats and rye are efficient providers of calories and possess the advantage of being readily transportable. However, the proteins of cereals and vegetables fail to provide all the amino acids necessary; moreover, a need for fat, which apparently is very real, cannot be met with cereals and vegetables alone. Therefore, planning to meet the food needs of countries overrun by war, likewise to meet the needs of areas like India where population pressure excludes the use of land for producing meat and milk, involves attention to supplies of protein and fat. Certain resources, especially fish, can be made to contribute more abundantly. Food yeast offers possibilities. Yeast and beans, soy beans in particular, afford proteins which when taken with wheat flour or white rice are reasonably complete. Fat production can be augmented by increased planting of "oil seeds" such as soy beans, peanuts, rape and okra, and fat can be diverted from other uses in order to increase the amount available for food. Foods for distant shipping in conditions of emergency, likewise foods which lend themselves to stockpiling, must be low in water content and relatively imperishable. White flour, white rice, sugar and fats and oils best meet such requirements. They, however, for the most part are poor in minerals, vitamins and superior proteins. Among the foods best suited to supply these factors in emergencies are dehydrated milk, cheese, dried eggs and fish.

Clinical Notes, Suggestions and New Instruments

GRANULOMA INGUINALE OF THE VAGINA AND CERVIX UTERI WITH BONE METASTASES

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Since McLeod's description in 1882 of granuloma inguinale as a "serpiginous or lupoid ulceration of the genitalia," this disease has been more clearly differentiated from other granulomatous lesions of the genitalia and the vagaries of its clinical manifestations have received increasing attention. Earlier concepts of the progress of this infection solely by serpiginous spread or by autoinoculation have been broadened in recent years as a result of accumulated evidence of lymphatic spread and involvement.¹ Examples of the latter are the inguinal "pseudobubo" ^{1a} following the primary genital lesion, the demonstration of the Donovan bodies in regional lymph nodes ^{1a, b} and the elephantiasis of the genitalia ² which may occur in this disease. To lymphatic spread has also been attributed the extensive involvement of the pelvic organs following granuloma inguinale of the cervix and vagina.³ Of significance are the pronounced systemic manifestations which are frequently associated with lesions in this region, particularly when complicated by pregnancy.⁴ These systemic manifestations indicate that granuloma inguinale, far from being strictly a local disease of the genitalia, has potentialities for widespread dissemination throughout the body, either of the specific etiologic agent or the products of secondary invaders. The former possibility has already been demonstrated by a few reported cases of metastatic lesions of bones and joints in distant parts of the body following lesions of the genitalia.⁵ Thus has evolved from the early beliefs of the limited implications of this disease a clearer understanding of the possibilities for widespread dissemination which this disease possesses.

The case of granuloma inguinale to be reported is of interest in view of the simulation of a carcinoma of the cervix, the profound systemic manifestations, the metastatic bone lesions and subcutaneous abscesses at a distance from the site of the primary lesion and the demonstration of organisms having the morphology of Donovan bodies in blood culture.

REPORT OF A CASE

A Negro woman, aged 19, was admitted to the maternity service of John Gaston Hospital Feb. 21, 1946, with a tentative diagnosis of threatened abortion and with evidence of pneumonia of the upper lobe of the right lung, which was later confirmed

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by roentgen observations. Subsequently she admitted having passed some "flesh" from the vagina the day before entering the hospital, so that it is likely that a complete or incomplete abortion had occurred before admission. She responded well to sulfadiazine therapy and was discharged in afebrile condition from the hospital on the ninth day.

She returned to her work in a restaurant and worked for one week. She was obliged to discontinue work at this time because her left hip had become painful and swollen so that she was unable to walk. She also had some discomfort in the right lower quadrant of the abdomen and in the back at this time.

During the next seven months she was confined to her home at a result of these complaints, spending most of her time in bed. She had no menstrual periods, and lost 60 pounds (27.2 Kg.) in weight (from 150 pounds [68 Kg.]) over this period. She was seen in the outpatient department in July, and at that time a woody induration of the left anterior wall of the vaginal vault was noted, with no involvement of the cervix. A diagnosis of streptococcal infection of the vagina and adnexa was made.

Four weeks before her second admission to the hospital she began passing bloody urine containing clots, accompanied by dysuria. The pain in the lower part of the abdomen became more severe at this time, and she also noted a bloody vaginal discharge.

She was admitted to the hospital for the second time on October 6. On admission her temperature was 102.4 F., pulse rate 100 and respiration rate 26. Blood pressure was 100 systolic and 60 diastolic. She was rather emaciated and appeared to be weak. Among the significant findings at this time were tenderness in the lower abdominal quadrants and the presence of a tender, nodular, friable infiltration of the cervix and lateral and posterior walls of the vagina. Bimanual examination was unsuccessful because of the extreme tenderness and the "frozen" condition of the pelvic organs due to parametrial and adnexal thickening. Rectal examination also produced excruciating pain.

Laboratory examination on admission revealed a red blood cell count of 3,700,000 per cubic millimeter, a hemoglobin level of 10.0 Gm. per hundred cubic centimeters and a white blood cell count of 20,250 per cubic millimeter with 84 per cent polymorphonuclear leukocytes. The corrected sedimentation rate was 31.5 mm. in sixty minutes. The urine showed albumin

of sanguinous pus. Soon after this she complained of pain in the right knee and in the knuckle of the left hand. No swelling was noted, and the pain soon subsided. Two weeks later the pain recurred in the same regions, this time being associated with definite swelling and local tenderness. Again these signs and symptoms subsided, only to recur two weeks later, progressing this time to form large fluctuating abscesses beneath the skin, which appeared normal. These abscesses were incised.



Fig. 2.—Pathognomonic cell of granuloma inguinale, obtained from abscess of the hand. The macrophage cell contains a cyst or "nest" of closely packed Donovan bodies. In the cytoplasm of the macrophage cell individual Donovan bodies show the typical encapsulated, safety pin forms.

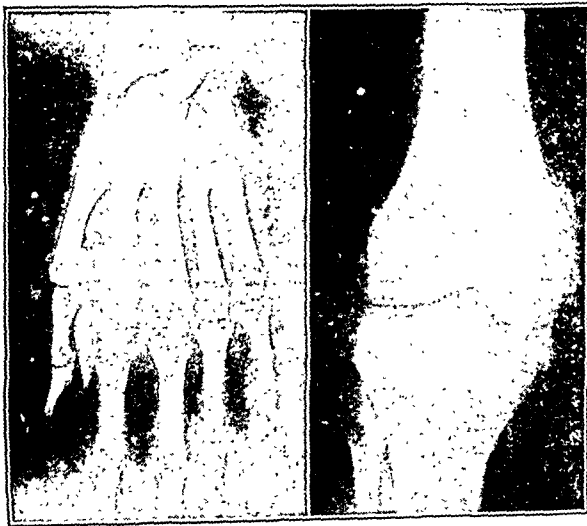


Fig. 1.—Bone changes underlying subcutaneous abscesses. The distal end of the second metacarpal bone shows rarefaction with extensive periosteal proliferation. The tibia shows an area of rarefaction on the medial surface of the condyle.

(3 plus) with innumerable white and red blood cells. The Kahn test report was 3 plus. Frei, Ducrey and tuberculin cutaneous tests were negative in result. A roentgenogram of the chest revealed no abnormality. Two routine blood cultures and routine agglutination tests were also negative in result.

Soon after her admission to the hospital, a perirectal abscess developed, which was incised and drained, with the evacuation

The pus was cultured by routine procedures, but nothing could be grown. Tender swellings of the dorsum of the right hand and of the left elbow also appeared at this time, but did not progress to suppuration. Roentgenologic examination of these areas revealed areas of bone destruction under each swelling noted before. The right tibia showed an area of destruction 2 cm. in diameter on the medial surface of the condyle. This area of necrosis was surrounded by a rim of sclerosis. In the distal end of the shaft of the second metacarpal bone of the left hand was a cystlike area of rarefaction with extensive periosteal proliferation (fig. 1). The navicular bone of the right hand showed an area of destruction involving one half of this bone.

A cystoscopic examination was performed because of the urinary complaints present at the time of admission. This revealed a granulomatous lesion of the bladder, involving the floor and left wall. There was some obstruction of the left ureteral orifice, with hydronephrosis and hydronephrosis on that side. The impression was that of an extensive malignant growth, originating from the cervix uteri and spreading to involve the bladder.

Biopsies of the cervix uteri revealed numerous large macrophages, suggesting the possibility of granuloma inguinale. Intensive search for the Donovan bodies revealed them in the hematoxylin and eosin preparations, although they appeared rather pale and were seen only with difficulty in these preparations. Preparations stained with Giemsa or with Dieterle's silver stain demonstrated the Donovan bodies more clearly. What we considered to be the most satisfactory preparation of all in demonstrating the Donovan bodies was obtained by simply smearing a particle of granulation tissue on a slide and staining by Wright's technic, as for blood smears. Contact smears of the granulation tissue at the sites of the incisions

of the left hand and right knee stained by the latter procedure also revealed these organisms in profusion in macrophage cells (fig. 2).

A blood culture employing tryptose-peptone-egg yolk agar showed organisms morphologically resembling Donovan bodies. This, together with observations made with an antigen obtained from pus from one of the abscesses, is being reported separately.⁶

Response to intravenous injections of antimony potassium tartrate was dramatic. The initial dose was 3 cc. of a 1 per cent solution. Subsequently the dose was given every other day, increased by 1 cc. each time until the tolerance level of 8 cc. was reached. Within a week the temperature receded to normal, appetite improved and weight gain was noted. During the next three weeks a gain of 20 pounds (9.1 Kg.) in weight was made. The granulation tissue in the vagina became firm in consistency and shrank in size so that only a small area of the cervix was involved. Granulation tissue at the site of the incisions in the hand and knee healed more slowly, and Donovan bodies could be demonstrated in this granulation tissue twenty-four days after treatment was initiated. Forty days after treatment was started the typical encapsulated Donovan bodies were no longer observed, but in a few macrophages there could still be seen clumps of nonencapsulated organisms, similar in appearance to Donovan bodies. The patient was discharged from the hospital with advice to continue her treatment in the outpatient department.

COMMENT

This case is of interest from the standpoint of providing additional evidence of the capacity for widespread systemic invasion inherent in granuloma inguinale of the cervix uteri. While bone metastases as described in this case have rarely been reported in the literature, it is conceivable that they have occurred more frequently than has been recognized and that they have been mistaken for cancers of the cervix with bone metastases. The possibility of confusing, on clinical appearance, granuloma inguinale of the cervix with a malignant growth of that site can readily be understood, as it is doubtful whether these can be distinguished on clinical grounds alone. What cannot be condoned is the treatment of such cases as cases of malignant growths without substantiating histologic findings, on the grounds that the biopsy may not have been correctly taken and that the clinical evidence of cancer was so overwhelming.

Attention should be called to the fact that in biopsy material the possibility of granuloma inguinale should be suspected when large numbers of large macrophages are present. The diagnosis can then be verified by the careful study of tissues for the presence of the Donovan bodies. Since these bodies are most readily seen in contact smears stained by the Wright technic it is always advisable to supplement the biopsy study with this procedure when feasible. This is especially indicated when lesions of the cervix suspected of being malignant fail to reveal evidence of being so on biopsy study.

The dissemination of the infection, with systemic manifestations, which occurred in our patient after an abortion emphasizes the hazard which pregnancy holds for patients with granuloma inguinale of the cervix. This hazard has been emphasized by others,¹⁴ who have reported widespread pelvic involvement and death following such a complication. The importance of having a high index of suspicion for granuloma inguinale in the presence of lesions of the cervix in pregnant women is obvious.

The occurrence of bone lesions in this patient at sites commonly involved in hematogenous spread of infection justifies the assumption of hematogenous dissemination of the etiologic agent. In no instance was there any evidence of involvement of the skin at the site of the fluctuating abscesses prior to their incision. This rules out the possibility that autoinoculation played a role in producing these lesions at a distance from the original site of involvement. The failure to demonstrate common organisms by routine blood culture and the demonstration in blood culture of organisms having the morphologic appearance of Donovan bodies would appear to confirm this opinion. We were unable to find any other instance reported in the literature

in which Donovan bodies have been observed in blood culture. Failure to observe continued growth in the medium employed indicates that this medium is not a suitable one for the continued propagation of this organism.

SUMMARY

A case of granuloma inguinale is described in which the initial involvement of the vagina, cervix and bladder was subsequently followed by bone metastases with overlying abscesses in distant parts of the body.

The progress of the infection, with profound systemic manifestations, following an abortion emphasizes the hazard of pregnancy for women with untreated granuloma inguinale of the cervix.

The sites of bone involvement and the deep tissue suppuration arising therefrom suggest hematogenous spread of the etiologic agent in this case. The demonstration, the first which we have been able to find in the literature, of organisms having the morphologic appearance of Donovan bodies in blood culture on special medium substantiates this impression.

The unreliability of routine hematoxylin and eosin preparations of biopsy material in demonstrating clearly the Donovan bodies is pointed out.

Attention is called to the fact that granuloma inguinale of the cervix uteri may simulate a carcinoma in appearance. It is recommended that in the examination of lesions from the vagina and cervix for suspected malignancy smears be obtained from the surface of the lesion, or from particles of granulation tissue, and stained with Wright's stain. This rapid simple procedure might well be placed on a routine basis in population groups in which granuloma inguinale is known to occur.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., Secretary.

CHORIONIC GONADOTROPIN (See New and Nonofficial Remedies, 1947, p. 374).

The following additional dosage form has been accepted:

GEORGE A. BREON & CO., KANSAS CITY, MO.

Chorionic Gonadotropin, 5,000 International Units and 10,000 International Units: 10 cc. vials. A powdered preparation which, when diluted with the accompanying 10 cc. vial of sterile distilled water containing 0.2 per cent metacresol, provides a solution having a potency of 100 or 500 international units, respectively, per cubic centimeter.

TYPHOID VACCINE (See New and Nonofficial Remedies, 1947, p. 462).

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Typhoid Vaccine: 5 cc. and 20 cc. vials. Each 1 cc. contains 1,000 million killed typhoid bacilli (Panama carrier strain 58). Preserved with sodium ethyl mercuri thiosalicylate 1:10,000.

STERILE SULFADIAZINE SODIUM (See New and Nonofficial Remedies, 1947, p. 141).

The following dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Sulfadiazine Sodium (Sterile Powder): 5 Gm. ampuls.

EPHEDRINE SULFATE (See New and Nonofficial Remedies, 1947, p. 214).

The following dosage form has been accepted:

THE S. E. MASSENGILL COMPANY, BRISTOL, TENN.

Solution Ephedrine Sulfate, 3 per Cent: 473 cc., 120 cc. and 30 cc. bottles. Preserved with 0.5 per cent chlorobutanol.

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SATURDAY, JANUARY 31, 1948

WHEAT AND WORLD HUNGER

Why do we send wheat as a most important article of diet to the hungry people we are trying to help? The high food value of wheat per unit of weight, its excellent keeping qualities, its ease of handling and storing make it ideal for shipping; further, wheat satisfies hunger as do few other foods. Why is wheat the dominant food grain—the grain of choice for bread? The answer rests chiefly in two factors: (1) properties inherent in wheat itself and (2) the widespread, general insistence on wheat and its milled products.

Aside from certain areas of Monsoon Asia where agricultural factors and habits observed for centuries have combined to establish rice as the dominant food grain,¹ five cereal grains—wheat, corn, oats, barley and rye—constitute the principal grain crops. Except for certain differences in quantitative aspects, all cereal grains exhibit similarities in composition and nutritive value. Some of these quantitative differences, however, are not without significance; for instance, the association of pellagra with the consumption of high proportions of whole ground cornmeal.

Wheat, among the five principal grains grown in Western countries, embodies most of the superior qualities of each of these common grains. It is not bulky, thereby minimizing the costs of handling; as whole grain or white flour it has excellent keeping qualities; by virtue of the rather unique quality of its protein (gluten), wheat flour is preeminently suited for making yeast-leavened breads.

The present shortage of wheat concerns physicians throughout the world because it stands as a stark barrier to the relief of world hunger and as an obstacle to world economic recovery. Never before has relief from hunger of so many millions of persons been so contingent on available supplies of a single food item.

Why is there a world wheat shortage? In spite of the devastations of World War II, the Western countries of Europe demonstrated remarkable powers of recovery in wheat production in 1946. The reverse in this trend in 1947 was caused principally by unfavora-

ble weather conditions for growing wheat in several Western and Southern European countries. Wheat reserves in recent years have been absent in practically every country that normally produces a surplus of the grain.

The principal non-European wheat-exporting countries include Australia, Argentina, Canada and the United States. Australia's wheat exports, although important, are relatively small; Argentina's wheat exports are under government monopoly, with insistence on payment in American money at the highest price of wheat on the world market; Canada's exports are destined largely for Great Britain. This leaves the United States to fill the gap as far as possible. In those countries where the demand for wheat imports has not been satisfied, the strain on other available food supplies has been stretched to the limit; demand for food has overwhelmed supply; food prices have skyrocketed except where controlled; black markets in foods tend to flourish so that whole national economies are disrupted by present food shortages.

Why not spread the strain to other grains or to other foods than wheat? Few countries produce surpluses of any food. In Western Europe many countries are deficient in several staple foods. The use of fruits and vegetables is largely precluded in the relief of mass hunger by their bulk, high water content, easy spoilage, inflated prices and high cost of transport by rail and water. Some dehydrated foods are being sent to Europe, but the quantities available are not significant. Small amounts of meat, dehydrated eggs and milk are also being sent to European countries. However, all profitable and large scale production of top quality meat, dairy or poultry products requires grain. Shortage of feed grains, such as now exists in this country, should tend to be balanced by appropriate reductions in live stock. There is no escape from the fact that cereal grains (food or feed grains) used directly and indirectly as food are the bulwark of sustenance for most of the world's human population. The excessive production of animal-converted foods—especially top quality meats which require extra grain for fattening—is a waste of food calories during a world food crisis. Less expensive cuts of meat contain relatively more protein per unit of weight, are equally nutritious and require much less grain in their production.

In the forthcoming edition of the "Handbook of Nutrition" of the Council on Foods and Nutrition other aspects of the problem of the relation of wheat to human nutrition will be discussed. Some of the chapters will appear first as special articles in THE JOURNAL. Maynard of Cornell will describe the contribution of foods of plant origin to the human diet, Ancel Keys will discuss starvation and Wilder and T. E. Keys (this issue, p. 322) the role of foods for emergencies. Now more than ever before a knowledge of nutrition is significant not only for individual health but for the future of the world.

¹ Millet and buckwheat (not properly a cereal grain) continue in general use in a few regions.

GENETIC CONTROL OF LYMPHOMATOSIS IN THE FOWL

Neoplastic diseases are not exclusively a problem in man; lymphomatosis in fowl causes an annual loss in this country of \$50,000,000.¹ Forty per cent of the high mortality in growing fowl during the first year of life results from lymphomatosis. The disease is characterized by a proliferation of undifferentiated lymphocytes in the viscera, nerves and iris; it is transmitted to fowl under 5 months of age by contact with older stock. Since lymphomatosis is transmissible by cell-free filtrates it is presumably a virus disease, neoplastic in character.

Hutt and Cole² controlled the disease by genetic methods. In twelve years they developed from a previously unselected population two strains of fowl resistant to the disease. Other desirable features such as satisfactory body size, egg size, and egg production were not lost in the process. Simultaneously, by the same genetic methods, a strain highly susceptible to lymphomatosis was produced, despite the fact that selection was less efficient. In the resistant strains mortality from the neoplasms was reduced to about one third its original figure; in the susceptible strain it was doubled. The latter strain now has a tumor mortality of over four times that of the resistant strains under identical conditions of exposure.

Records of breeding were kept, including the ancestry of each chick; uniform environment was maintained and equal natural exposure to lymphomatosis was insured. The sires and dams whose production of the most resistant families had been proved were selected for breeding. Not only was mortality from lymphomatosis reduced but that from other causes as well. Decreased mortality from lymphomatosis was accompanied by an increase in average age at which the disease appeared.

After the desired lymphomatosis-resistant stock was developed, the next problem concerned utilization of the fowl to best advantage. The investigators concluded that the best method would be to send the desirable genes of the resistant strains in thousands of cockerels to head flocks that supply the hatcheries that now produce about 90 per cent of the country's chicks.

While this method of attack on a problem in neoplastic disease is interesting, similar genetic methods are not, in the present state of society or in the near future, applicable to problems in human disease. Furthermore, there is no known human neoplastic disease comparable to this form of lymphomatosis in fowl. The human malignant lymphomas have to date revealed no transmission by contact, transmission by

cell-free filtrates or high incidence in certain families. In these respects the lymphomatosis of fowl resembles an infectious disease and the methods used in its control were those applicable to some infectious diseases of animals but not to those of man.

THE PAPANICOLAOU TEST FOR UTERINE CANCER

Early diagnosis of uterine cancer has depended chiefly on the subjective symptoms of the disease. Often the disease is far advanced by the time the patient becomes sufficiently aware of discomfort to seek help. Study of the normal and abnormal variations in the vaginal smear in guinea pigs and in women convinced Papanicolaou that carcinoma of the fundus of the uterus and carcinoma of the cervix are to some extent exfoliative lesions. Cells at the free surface of the growth tend to become dislodged and subsequently to find their way into the vagina. Papanicolaou developed a method for collecting the cellular debris, which is smeared on glass slides and specifically stained so that the various components may be studied. In their first report on the method, Papanicolaou and Traut¹ emphasized that "whereas the method makes the material for examination easily and frequently obtainable at low cost, the interpretation of the smear requires the services of a careful and discriminating cytologist who has had experience in this field. Few persons can be depended on for this work at the present time."

Cervical cancer is revealed in vaginal smears by the appearance of characteristic cells derived from the superficial layers of the tumor, which undergoes continual desquamation. These cells show great variety in form and size, much greater than that seen in sections of the tumor. The most characteristic feature of the abnormal cells is the atypical form and structure of their nuclei and vacuolization of the cytoplasm. A commonly found, characteristic cell type is an extremely elongated one resembling a smooth muscle fiber. Erythrocytes are generally found in large numbers. Papanicolaou and Traut, utilizing the vaginal smear technic, failed to detect malignant cells in 4 of a total of 127 patients with demonstrable cancer of the cervix. They found cancer cells in the vaginal smears of 46 of 53 patients with cancer of the fundus.

Meigs and his associates² reported 4 positive smears in a total of 153 negative cases, an error of 2.6 per cent. Of 46 patients with proved cancer of the cervix, positive vaginal smear diagnosis was made in 45, an error of 2.2 per cent. These authors expressed their belief that a cancer cell can be more readily identified in the vaginal smear than in body fluid sediments or sputum. This increased accuracy in diagnosis is proba-

1. Winton, B.: Fourth Annual Report of the Regional Poultry Research Laboratory, East Lansing, Mich., United States Department of Agriculture, Washington, D. C., Government Printing Office, 1943, p. 3.
2. Hutt, F. B., and Cole, R. K.: Genetic Control of Lymphomatosis in Fowl, *Science* **106**: 379-384 (Oct. 24) 1947.

1. Papanicolaou, G. N., and Traut, H. F.: The Diagnostic Value of Vaginal Smears in Carcinoma of the Uterus, *Am. J. Obst. & G.* **42**: 193 (Aug.) 1941.

2. Meigs, J. V., and others: The Value of the Vaginal Smear Diagnosis of Uterine Cancer, *Surg., Gynec. & Obst.* **77**: 44* 1943.

bly due to the fact that cells of the vaginal fluid are in greater concentration and have suffered less degeneration. These authors did not feel justified in advising operation for uterine cancer solely on the evidence of a positive vaginal smear. They insisted that the positive smears should be confirmed by biopsy or curettage. They also emphasized the need for a systematic study of the entire smear and an experienced knowledge of cytology. The method of vaginal smear examination, in their opinion, is an important addition to the early recognition of uterine cancer.

Block³ has warned that a positive diagnosis from a vaginal smear does not indicate immediate radical intervention or irradiation, but rather that confirmatory biopsies of the cervix or endometrium should be performed.

Scheffey and Rakoff⁴ deplore in a recent communication the exaggerated statement that appeared in the Sept. 19, 1947 issue of the *New York Times* regarding the cytologic test for uterine cancer. "The message of hope" reported in this article was condensed from an article by Clive Howard in the October 1947 issue of the *Woman's Home Companion*. According to this article "the new method is inexpensive, painless and at least 97 per cent accurate. If put into general use it may almost wipe out this form of cancer." The danger was the creation of a tendency to depend on a laboratory examination rather than on a complete study of the condition. The report does not stress that a positive smear must be confirmed by cervical biopsy or resection and/or by curettage of the uterine cavity. The article was completely laudatory except for mention of the 3 per cent error of the investigators. Scheffey and Rakoff found in a study of 500 consecutive cases, taking only a single smear and without clinical knowledge of the cases on the part of the cytologist, that of 63 proved cancer patients correct positive smears were obtained in 44, or 70 per cent. In other words, 30 per cent of the cancer cases were missed. Excellent correlation, however, was obtained in 437 patients who did not have carcinoma, correct smears being obtained in 430, or 98.4 per cent, while false positives occurred in only 7, or 1.6 per cent. Apparently, therefore, the good results for the entire group, namely 98.4 per cent correct results, were influenced largely by the high proportion of negative patients. In studies by other workers false positives were comparatively rare but positive cases were missed in an appreciable proportion of the cases. The limitations of the vaginal smear method, especially when only one smear is taken, are obvious.

Recently a manufacturer of laboratory equipment has promoted the sale of the materials for the Papanicolaou test together with a hundred slides of various types of cells found in cervical smears. The firm cannot, however, sell the most important ingredient—a compe-

tent pathologist to study the specimen promptly after it is secured from the patient. The offer implies that special training is not necessary to secure and to examine the specimen. The indiscriminate use of this test will result in more harm than good.

Current Comment

CHECKING THE SPREAD OF YAWS ON PACIFIC ISLANDS

On the numerous small islands in the Pacific Ocean within a few hundred miles of the atoll of Truk, thousands of the inhabitants are afflicted with yaws, an infectious disease caused by the *Treponema pertenuis* (*Spirochaeta pertenuis*) and resembling syphilis in some of its manifestations. The people on these islands now receive medical care by U. S. Navy personnel¹ from the Truk atoll; a medical team visits them every six weeks. The lack of personnel and ships and the distances led the navy physicians to try a single intramuscular injection of 200,000 units of sodium penicillin in 4 cc. of sterile water as a stopgap measure to check the spread of yaws. As it became available toward the end of the program, a single injection of 300,000 units of calcium penicillin in 1 cc. of beeswax and peanut oil was substituted. The persons treated numbered about 5,000. The careful records kept for the period from October 1946 to June 30, 1947 show that the rate of infection with yaws has been much reduced. The thirteen small islands south and east of Truk showed a reduction, over a period of six months, from 57 new cases per thousand per month to 16 new cases per thousand per month. The total number of clinically active cases was also reduced. At the same time the character of the lesions commonly present in those afflicted has changed. When this program began in 1946, the ratio between the open cases, with ulcers, and the closed cases was about one to two. In June 1947 the major portion of the total number of cases still active was of the "crab yaws" variety, the less infectious type. Since last July the islands south and east of Truk have been staffed with native health aides trained to give oxophenarsine hydrochloride ("mapharsen") and bismuth compounds and thus carry on curative treatment. Curative therapy with penicillin, which would be more satisfactory, cannot be instituted because of the lack of refrigeration facilities on the islands. However, the single massive dose therapy with penicillin will be continued on the islands north and west of Truk until they too can be staffed with natives trained in the application of curative therapy. Thus it appears that a single intramuscular injection of a massive dose of penicillin is effective in checking the spread of yaws and in controlling the active cases until curative therapy can be instituted. The U. S. Navy is to be congratulated on its effort to prevent the spread of a deforming and disabling infectious disease, which is particularly prevalent among members of the dark races of the tropics.

3. Block, F. B.: Cancer of the Cervix, *Am. J. M. Sc.* **208**:794, (Dec.) 1944.

4. Scheffey, L. C., and Rakoff, A. E.: The Cytology Test for Uterine Cancer, *Philadelphia Med.* **43**:435 (Nov. 15) 1947.

1. Arje, Sidney L. (MC), U. S. N.: Yaws Treated with Single Massive Doses of Penicillin, *United States Naval Medical Bulletin* **47**:966-969, (Nov.-Dec.) 1947.

ORGANIZATION SECTION

Official Notes

HOTEL RESERVATIONS FOR THE ANNUAL SESSION IN CHICAGO, JUNE 21-25, 1948

A list of hotels in Chicago and information concerning the best way to secure hotel reservations for the Annual Session, to be held in Chicago June 21-25, 1948, may be found on advertising pages 56 and 57 of this issue of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*. The meetings of most of the sections will be held on Navy Pier.

It is urged that physicians expecting to attend the annual session in Chicago fill in the application form to be found on the advertising pages indicated, sending it to Dr. Fred H. Muller, Chairman of the Subcommittee on Hotels of the Local Committee on Arrangements, 195 West Madison Street, Chicago 2.

Medical Economics

THE SELLING PRICE OF A MEDICAL PRACTICE

FRANK G. DICKINSON, Ph.D.
Director, Bureau of Medical Economic Research
Chicago

Some time during his professional career, a physician may face the problem of buying or selling a practice. After the physician completes his internship or residency, he may consider purchasing the practice of an older physician. After establishing himself in private practice, he may for various reasons contemplate a change of location, involving both the sale of his own practice and the purchase of another elsewhere. Following the retirement or death of a physician the sale or disposal of his practice may be considered.

The sale or purchase of a medical practice raises many questions; a considerable number of requests for information and advice are received at the headquarters of the American Medical Association. Perhaps the most frequent question concerns the means of establishing a proper selling price for a practice. But little has been published on this subject recently. Thoroughgoing studies have not been made of either the economic or legal aspects; nor have there been any compilations of actual experiences. The Bureau of Medical Economic Research recently conducted an informal survey among secretaries of state medical societies and accumulated available facts from other sources.

SALE OF PRACTICES IN ENGLAND

In England the custom of selling medical practices for prices significantly above the value of equipment, supplies and other tangibles has long prevailed. A special circumstance exists in England and possibly in other countries where panel practices have been established as a result of the operations of sickness insurance systems. The following brief description of this custom was received in a communication from an authoritative source in London:

The sale of the goodwill of general medical practices in England is based on a figure related to the past earnings of the practice and to the estimated receipts from continuing patients. In all cases the gross earnings for one year (or the average gross earnings for two or three consecutive years) is taken as the basic figure from which to work. This figure is multiplied by the number of years' purchase agreed between the vendor and the purchaser. In the years preceding the outbreak of war in 1939 this factor varied between one year and two and a half years, the lowest figure being that obtainable in the least satisfactory circumstances such as the death of a man in singlehanded practice where there was no opportunity for the newcomer to be given any introduction to the patients.

The price increased directly with the degree of probability of transfer of the patients of the vendor to his successor. Experience has shown that state patients on the doctors' Panel Lists only infrequently exercised their right to transfer to another doctor rather than accept the services of the purchaser of their former doctor's practice. In consequence practices with a high proportion of state patients tended to change hands for slightly more than ones in which there was less certainty of the continued adherence of private patients.

On the average, a well established practice, where there was good opportunity to introduce a new partner, sold at about two years' purchase.

Another correspondent reported that this custom applies basically to general practices, although the goodwill of ophthalmic and radiologic specialists also may be sold. Unpaid bills may or may not be included in these transactions. In addition, it is usual to make a separate valuation of the "capital" of the practice, which would include drugs, supplies and equipment. This writer emphasized that it is not patients but goodwill that is sold.

AVAILABLE INFORMATION AND SUGGESTIONS

Current information concerning physicians' practices which are for sale may be obtained from several sources. A few state societies reported that they occasionally provide clearing-house facilities between parties; possibly most other societies would be willing to furnish available information. The medical journals are probably the most important source for such opportunities—including the classified advertising sections of local, state and national publications. Other avenues of approach for either the buyer or seller are medical placement agencies and inquiries among professional acquaintances. In addition, a physician wishing to purchase a practice may offer an advertisement.

Many of the secretaries of medical societies commented on the factors to be evaluated in ascertaining the selling price of a practice: Most of them considered that the tangible goods could be appraised readily but suggested that pricing of intangibles was extremely hazardous. The following is a list of types of goods, together with comments and suggestions, developed from available sources:

1. *Real and Personal Property and Equipment.*—Medical equipment, supplies and the physician's residence (if this is included) may be appraised by real estate brokers, equipment dealers and other consultants in order to establish a fair market value. Most authorities felt that these constituted the basic, if not the only value, of a medical practice.

2. *Transferable Contract Appointments.*—If the seller holds appointments as an industrial consultant or house physician, or holds other positions providing a salary or other regular remuneration, the possibility of transferring these to the buyer may be explored. A value equal to an agreed percentage, perhaps of the annual income for the first year, may be established for this assured income.

3. *Lease of Office Space and Residence.*—While housing and office space continue to be in short supply in many parts of the country, a money value may be established for the transfer of leases on desirable space of this nature.

4. *Uncollected Bills.*—Bills for current services to patients or for relatively recent services may be transferred to the new physician for some consideration, or other arrangements for collections may be made which will be mutually agreeable. Often, the selling physician or his heirs will retain them for collection through their own agents.

5. *Goodwill.*—A formula or procedure has not been suggested which might be used consistently to establish a cash value for goodwill. One secretary commented, "I am of the personal opinion that it is absolutely impossible for a physician to set a price on goodwill or the value of a practice as such." Another stated, "It depends to a great extent on the value of services,

character and personality. One doctor may not be able to give the same services as the previous physician, or to pick up and use the goodwill left behind because of difference in personalities or other intangibles, and thus may lose all the goodwill." The general conclusion was that since the personal element is so important in the services provided by a physician, it may not be valid to assume that a physician's goodwill can be sold in the same fashion as a manufacturer's or a retail store's goodwill.

6. Patients' Records.—The problem of evaluating patients' records as to goodwill is even more difficult. Case histories, diagnostic reports, financial and other records can be of great value in assisting a new physician in the treatment of patients of the former physician. Many secretaries, however, felt that patients' records were essentially intangibles and therefore difficult to price. In addition, one secretary pointed out that ethical and legal issues are involved in transferring such records to a buyer without the patients' consent. To some extent this objection may be overcome if arrangements are made to have the buyer introduced to the community by the retiring physician as a professional associate for a period of time. Several secretaries felt that this is a more valuable arrangement in rural areas than in urban areas.

NO RULES OF THUMB

The buying physician may agree that the location, introduction to old patients or other circumstances will assure a steadier patient load than if he were to start a practice without these advantages. Basically, any inherent money value in these intangibles is reflected in the number of old patients who will continue to come to the buying physician. The buying physician may agree to pay the seller a given percentage of net income received from old patients during the first year or two; new patients during the first year may or may not be considered a separate or additional goodwill item. It should be clear to both parties that generalizations or "rules of thumb" regarding the probable percentage of old patients who will accept the new physician are open to serious question when applied to a given situation. Since prediction is so hazardous, both parties would be well advised to provide for final determinations of this item of goodwill a year or two later, although the formula may be set forth in the contract. This arrangement is considered also in cases in which a partnership or group is dissolved, but often it will involve much more complex formulas for establishing the interest of each member.

Careful consideration from the point of view of medical ethics should be given to any mutually satisfactory arrangement providing payments for the goodwill item out of future income or basing the value of this item on future income.

SPECIALTY PRACTICE

The question of sale or purchase of a specialty practice involves further difficulties. As a specialist depends greatly on referred patients, greater care must be taken to verify the continuation of a sound relationship with referring physicians. A general suggestion, both for a specialty practice and for a general practice, is to consider employment of a young man on a salary basis, with agreement as to terms of eventual sale or shift to partnership activity. In some instances such an agreement might prove more satisfactory to both parties than an outright sale.

CONCLUSIONS

The physician should exercise extreme care in arranging to sell or purchase a practice. Perhaps the best statement on the problem is the following by one of the state secretaries:

The location, the type of practice, the size of the practice and the competition that is present are all factors which must be considered in each individual sale, and it appears that probably there is no formula that can be set up—even with an area such as a state—that would assist in any individual transaction. I am inclined to look on this as an individual business venture that would depend entirely on an agreement between the parties concerned. Even though in the eyes of every one else the purchase price was too high or too low, if it was agreeable to the two parties concerned, it would still be a happy transaction. And for those reasons, it has been the opinion of the society that it would not interfere or attempt to offer any assistance to persons contemplating the purchase of a practice.

Because of the extremely involved professional and financial interests arising out of such negotiations, the Bureau of Medical Economic Research strongly urges that principals make no final

arrangements without the assistance of their attorneys. This is especially true if the transaction cannot be consummated at once but involves payments or professional relationships, such as partnerships, which extend over a period of time. Additional technical information and assistance on legal aspects of these contract matters is available to physicians' attorneys through the Association's Bureau of Legal Medicine and Legislation.

One alternative to the purchase of a practice was suggested by several secretaries—the establishment of a new practice in a community. If, after exploring the advantages and disadvantages of buying a given practice, it appears that there is no singular value in the location, type of practice or tangible goods, the physician can give serious consideration to the selection of another location in the community. It is this alternative which largely accounts for the infrequency of sales and the tenuous value of the goodwill item in medical practices in the United States.

Medical Legislation

STATE LEGISLATION

Massachusetts

Bills Introduced.—H. 89, to amend the medical practice act, proposes to authorize the board to accept the certificate of the national board of medical examiners or the certificate of the national board of examiners for osteopathic physicians and surgeons of the American Osteopathic Association, in place of its own professional examination, provided the applicant has not previously attempted unsuccessfully to secure registration in the state. H. 94, relating to the fees of physicians, proposes that a physician's fee for making an authorized mental and physical examination shall be \$7 plus 20 cents for each mile traveled one way. H. 103, relating to the physical examination of school children, proposes that the board of health shall cause every child in the public schools to be separately and carefully examined at certain intervals to ascertain defects in sight or hearing and other physical defects tending to prevent his receiving the full benefit of his school work. The proposal also requires that a physical record of each child be kept in such form as the department of health may require. H. 934 proposes a resolution to the Congress of the United States memorializing the Congress to enact legislation providing for the establishment of a National Science Foundation with the appropriation of sufficient funds to encourage scientific research to be conducted which shall be made available to the directors of the armed forces and insure national security in the future. H. 978, to amend the medical practice act, proposes to authorize any person whose certificate has been suspended, revoked or canceled to file a bill in equity within ninety days for the purpose of reviewing such suspension, revocation or cancellation. H. 991, to amend the workmen's compensation act, proposes that the employee's physician's fee shall not be less than the highest fee which the insurer agreed to pay any physician who appears and testifies in its behalf. H. 999 and S. 231 propose the enactment of a Massachusetts cash sickness compensation act. H. 1069 to amend the law relating to the sale and distribution of drugs and medicines, proposes that no harmful drug shall be sold at retail or dispensed or given away to any person except on the written prescription of a physician, dentist or veterinarian and that no prescription for a hypnotic or somnifacient drug or any other harmful drug shall be renewed or refilled by a pharmacist if the prescription bears any indication that it is not to be renewed or refilled. "Harmful drug" is then defined by the proposal as including amldopyrine, "benzedrine," cantharides, cinchophen, digitalis, dinitroresol, dinitrophenol, ergot, estrogen, natural or synthetic, barbituric acid, chloral hydrate, paraldehyde, sulfonamide drugs, thyroid, oil of croton, oil of pennyroyal, oil of savin and oil of tansy, and any other drug deemed by the department of public health or the board of registration in pharmacy to be a harmful drug. H. 1071 proposes that no licensed physician in the state shall be discriminated against or refused the right to practice his medical profession in any public hospital supported by public funds because said physician is not a member of a private medical society. H. 1074 and S. 348 propose to require certain food handlers to undergo regular physical examinations for tuberculosis or any other communicable disease which might endanger any person with whom he or she may come in contact. H. 1082 and H. 1038 propose to require any person who purchases or acquires a dog, cat or bird to be used for experimentation or mutilation while alive to keep a record and submit a report to the commission of public safety of each such transaction showing the source from which such animal or bird was obtained. H. 1090 proposes to prohibit the vivisection of any living dog within the commonwealth of Massachusetts. H. 1097 and S. 264 propose to prohibit any person from experimenting on living animals without a license from the state board of registration in veterinary medicine. Surgical experiments on such animals are permitted in certain specified circumstances. H. 1280, to amend the workmen's compensation law, proposes that the reasonable cost of a physician's service shall include a routine laboratory service fee for such service which should be allowed to every patient in order to diagnose honestly his injury, his condition and the effect of such condition on the injury. The reasonable cost of a physician's services would also include laboratory fees, x-ray fees and court witness fees.

for the time which the physician spent in court. H. 1463 proposes the creation of a Massachusetts cash sickness compensation fund. H. 1526 proposes to repeal all existing laws requiring vaccination. S. 230 proposes the enactment of a nonoccupational accident and sickness benefits law. S. 752 proposes the creation of a board of registration of chiropractors and defines chiropractic as "the science of locating and removing, by hand adjustment only, interference with the transmission or expression of nerve force in the human body, by the correction of misalignment of subluxations of the vertebral column. It excludes operative surgery, prescription or use of drugs or medicine or the practice of obstetrics, except that the x-ray may be used solely for the purposes of examinations; chiropractor is defined as a person who lawfully practices chiropractic."

Mississippi

Bills Introduced.—H. 24 proposes an appropriation to the state building commission for the purpose of erecting and equipping necessary buildings for a fully accredited Grade A four-year medical college, as a department of the University of Mississippi. H. 13 proposes the enactment of a Mississippi Workmen's Compensation Act.

New York

Bills Introduced.—A. 143 and S. 139 propose to repeal the existing law requiring persons, firms or corporations engaged in the business of procuring persons as blood donors to be licensed by the local health officer and requiring blood donors to present a certificate from a physician showing satisfactory physical condition before making the blood donation. A. 187, A. 275, S. 287, S. 301 and S. 371, to amend the unemployment compensation law, propose to authorize the payment of benefits to persons unemployed because of illness or disability, where such illness or disability is certified by a physician or surgeon duly licensed to practice in the state of New York. A. 362 proposes to regulate the working hours of registered professional nurses. A. 109, S. 285 and S. 410, to amend the unemployment insurance law, propose to extend the benefits thereof to persons employed by charitable and nonprofit institutions.

Coming Medical Meetings

Annual Congress on Medical Education and Licensure, Chicago, Palmer House, Feb. 9-10. Dr. Donald G. Anderson, 535 North Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Chicago, Palmer House, Feb. 6-7. Dr. F. S. Crockett, 535 N. Dearborn St., Chicago 10, Chairman.

American College of Allergists, New York, Hotel Pennsylvania, March 12-14. Dr. Fred W. Wittich, 423 LaSalle Medical Bldg., Minneapolis 2, Secretary.

American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, Philadelphia, Feb. 26. Dr. Norman N. Smith, 291 Whitney Ave., New Haven 11, Conn., Secretary.

American Society of Biological Chemists, Atlantic City, March 14-19. Dr. Otto A. Bessey, Public Health Research Institute, New York 19, Secretary.

Central Surgical Association, Chicago, Drake Hotel, Feb. 19-21. Dr. Walter G. Maddock, 250 E. Superior St., Chicago 11, Secretary.

Chicago Medical Society Annual Clinical Conference, Chicago, Palmer House, March 2-5. Dr. Willard O. Thompson, 30 N. Michigan Blvd., Chicago 2, Secretary.

Dallas Southern Clinical Society, Dallas, Texas, Hotel Adolphus, March 15-18. Dr. Glenn D. Carlson, 1133 Medical Arts Bldg., Dallas, Secretary.

Michigan Postgraduate Clinical Conference, Detroit, Book-Cadillac Hotel, March 10-12. Dr. H. H. Cummings, 2014 Olds Tower, Lansing 8, Chairman.

Mid-South Postgraduate Medical Assembly, Memphis, Tenn., Feb. 10-13. Dr. Arthur F. Cooper, 1479 Carr Ave., Memphis, Secretary.

Missouri State Medical Association, St. Louis, Hotel Jefferson, March 14-17. Mr. T. R. O'Brien, 634 N. Grand Blvd., St. Louis 3, Exec. Secretary.

National Conference on Medical Service, Chicago, Palmer House, Feb. 8. Dr. Edward F. Sladek, 232 E. Front St., Traverse City, Mich., Secretary.

New Orleans Graduate Medical Assembly, New Orleans, Municipal Auditorium, Feb. 23-26. Dr. Max M. Green, 1430 Tulane Ave., Room 105, New Orleans 13, Secretary.

Pacific Coast Surgical Association, Los Angeles, Ambassador Hotel, Feb. 24-28. Dr. Carleton Mathewson Jr., Stanford Univ. Hospital, San Francisco, Secretary.

Tri-States Medical Association of the Carolinas and Virginia, Charleston, S. C., Fort Sumter Hotel, Feb. 9-10. Dr. James M. Northington, 306 N. Tryon St., Charlotte 2, Secretary.

United States-Mexico Border Public Health Association, Laredo, Texas and Nueva Laredo, Mexico, March 20-22. Dr. M. F. Haralson, U. S. Court House, El Paso, Texas, Secretary.

Washington Letter

(From a Special Correspondent)

Jan. 29, 1947.

Taft Says Administration Health Bill Would Nationalize Medicine

In answer to a query following his address to the American Public Relations Association, Senator Robert A. Taft of Ohio, chairman of the Senate Republican steering committee, charged that the Wagner-Murray-Dingell bill would "not only socialize medicine but would nationalize medicine." He declared that the measure would actually provide some \$5,000,000,000 in revenue to Washington bureaus to distribute for free medical aid. The Taft-Smith-Ball-Donnell bill, on the other hand, would give free medical care only to those who cannot afford it. Speaking in general of his proposed health, welfare, housing and educational program, Senator Taft said: "I have a strong feeling that in this country if we have a large enough production we can try to abolish hardship and poverty. Whether through their own misfortune or not, there always seems to be a group that is bound to be behind. I think that the other 80 per cent of the people can try to bring them up to a reasonable standard of living in health, housing and education."

Reports Veterans' Medicine Suffers from Lack of Funds

Dr. Paul B. Magnuson, medical director of the Veterans Administration, declared that medical activities of the agency are being held down "all along the line" to stay within budgetary limits. Recently the Disabled American Veterans informed members of Congress of the financial plight of the veterans' medical program when they recommended a \$32,000,000 deficiency appropriation. Dr. Magnuson said that he does not expect to ask Congress for such an appropriation at this time, but he has urged that steps be taken so that there will be no repetition of the current situation. He reported that the hospital program will meet difficult times in four months when about 1,400 young military physicians assigned to the agency—those trained through the AST and the Navy V-12 programs, become eligible for release from the service. Great difficulty is now being experienced in the outpatient service, where officials claim that the number of applications for treatment are far in excess of such requests a year ago. Dr. Magnuson reported that approximately 500,000 veterans are awaiting dental treatment and about 70,000 others are awaiting examinations for outpatient medical care. Dr. Magnuson informed a press conference that he is preparing for the American Medical Association a list of the names of physicians suspected of "chiseling" on "fee basis" treatment for veterans, under the program whereby the government reimburses physicians for treatment given. Dr. E. M. Kennedy of the Veterans Administration dental service said that dental costs are taking some 70 per cent of the amount set aside for outpatient care. The medical budget for the current year totals \$452,000,000, of which \$210,000,000 is for salaries of all personnel. Salaries of Veterans Administration doctors and dentists total \$40,000,000. Of the remaining \$242,000,000, the sum of \$77,000,000 is for outpatient medical and dental programs.

Delay in Ratifying World Health Organization Note

The *Washington Post* commented editorially on the delay in ratifying the World Health Organization's constitution by all twenty-six members of the United Nations. To date seventeen nations have ratified, but Soviet Russia and the United States are among those that have not done so. When final ratification is obtained, the first World Health Assembly will be held within six months and the World Health Organization will become a full fledged member of the U. N. family. The *Post* commented: "Congress has, indeed, approved in principle, with some minor reservations, but the ratification bill was lost in the rush of the closing days of the last regular session of Congress. However, W. H. O. has not been inactive. Its work is being carried on by an Interim Commission, on which the United States is represented, the commission having its headquarters in New York and its technical office in Geneva, Switzerland. . . . Health problems are universal and are readily understood by even the simplest minds. Here is one international activity on which mankind should be able to unite."

GOVERNMENT SERVICES

NAVY

ONE YEAR EXPEDITION TO AFRICA

The Naval Medical Unit of the University of California's African Expedition sailed for Egypt January 14 to begin a year's research aimed to implement the prevention and cure of tropical diseases. Heading the naval unit is Comdr. J. M. Amberson (MC), U.S.N.; others in the unit are Comdr. T. K. Ruebush (MSC), parasitologist; E. Schwarz, zoologist; Chief Pharmacist Mate D. K. Lawless, parasitology technician, and Photographers Mate (second class) Harley S. Cope Jr., all of the Naval Medical School, as well as Mr. Harry Hoogstrall, entomologist, of the Field Museum, Chicago. The expedition will leave Alexandria, Egypt, early in February and will follow a southerly course through Central Africa to the Cape of Good Hope. The itinerary of the trip has been based on months of research and planning. Emphasis will be placed on making surveys and collections in certain areas. The safari will go through the Nubian Desert and will explore an area in which major collections were last made in 1830 by Ruppell, Hemprich and Ehrenberg. Collections will also be made in the Nuba Mountains and in the Jezira triangle, between the White and Blue Nile rivers.

From April to July Nairobi will be headquarters for a survey of Nerya, Uganda, the eastern Belgian Congo and, tentatively, Abyssinian Somaliland. During the wet months work will be done in the northern and northeastern areas, to include Lake Rudolf, the coastal country toward Somaliland, Pemba and Zanzibar Islands, and Central Tanganyika. Uganda, the Belgian Congo and the high mountains will have to be surveyed late in May and June.

While in the Union of South Africa the medical group will gather evidence relating to the effect of industrialization on the health condition of the African Negro. The shift of population from the tropics to the settled southern area will be considered.

The naval group will attempt to make a representative collection of South African flora and fauna for American institutions. The medical unit will seek material to be used for teaching purposes at the Naval Medical School, Bethesda, Md. Anatomic and pathologic specimens, blood smears, protozoa and bacteria, vectors of parasites, intermediate hosts and vertebrates, as well as live specimens to be used as laboratory animals, and pertinent photographic records will comprise part of the documentary evidence to be procured. New drugs and chemicals will be tested for control of infections, parasites and pests, and cooperation with local health authorities and research institutions will be sought.

MEETING OF RESERVE CONSULTANTS

The Reserve Consultants Board to the Bureau of Medicine and Surgery, Navy Department, held its annual meeting at the National Naval Medical Center, Bethesda, Md., on January 9. Dr. Winchell M. Craig, Rochester, Minn., is chairman of the board, which consists of former members of the Medical Department of the Navy. The agenda was comprised chiefly of items relating to the graduate training program of the Naval Medical Department. The amount of training to be given, the eligibility requirements for graduate training and the location of such training facilities were topics under discussion. The group was addressed by Rear Admiral Clifford A. Swanson, Surgeon General of the Navy.

MISCELLANEOUS

NEW COMMITTEE ON ISOTOPE DISTRIBUTION

The Atomic Energy Commission has appointed a new Advisory Committee on Isotope Distribution. This group will recommend to the commission new policies governing the distribution of isotopes, will review existing policies and will act as adviser to the Isotopes Division of the Atomic Energy Commission on allocation of isotopic materials. G. Failla, Columbia University Medical School, New York, is chairman of the new committee; other members are Hymer L. Friedell, Western Reserve University, Cleveland; A. H. Holland Jr., medical adviser, Oak Ridge, Tenn.; J. G. Hamilton, University of California; Joseph W. Kennedy, Washington University, St. Louis; Robley D. Evans, Massachusetts Institute of Technology; Robert F. Mehl, Carnegie Institute of Technology; Austin M. Brues, Argonne National Laboratory, Chicago; L. N. Nims, Brookhaven National Laboratory, Upton, Long Island, N. Y.; H. A. Barker, University of California, Berkeley; Henry Borsook, California Institute of Technology, Pasadena, and Paul C. Aebersold, Oak Ridge, Tenn.

A Subcommittee on Human Applications will consist of Drs. Failla, Friedell, Hamilton and Holland. Membership of a Subcommittee on Allocation will be Drs. Kennedy, Nims, Mehl, Brues, Evans, Barker and Borsook. Dr. Aebersold will serve as secretary to the committee and its subcommittees and as liaison representative of the Atomic Energy Commission.

The new committee held its first meeting in Washington, D. C., January 20. The Atomic Energy Commission has accepted with regret the resignation, effective Dec. 31, 1947, of the Interim Advisory Committee on Isotope Distribution Policy and of its two subcommittees, on human applications and on allocation. The interim committee and its subcommittees were appointed by Major Gen. L. R. Groves of the Manhattan Project. They recommended the general policies on which the Manhattan District initiated its radioisotope distribution program and

under which the commission has continued this activity. The subcommittees assisted the Isotopes Division at Oak Ridge in the review and evaluation of requests for radioactive isotopes and made recommendations on allocations of such materials.

LABORATORY RECEIVES DISTINGUISHED SERVICE AWARD

The laboratory of the Bureau of Entomology and Plant Quarantine at Orlando, Fla., has been awarded the Distinguished Service Award by the U. S. Department of Agriculture "for the development and application of means of protecting military personnel against attack by insects and diseases spread by insects." At the ceremony at the laboratory, January 24, the award was presented by the assistant secretary of agriculture, Mr. Charles F. Brannon. The research which the laboratory conducted during the war on these problems was sponsored by the Army and the Navy and made possible by the transfer of funds to the Department of Agriculture by the Office of Scientific Research and Development. During the afternoon of January 24 the laboratory held open house to enable visitors to see the laboratory and discuss the activities now under way on various arthropods that attack man.

SALE OF SURPLUS GOVERNMENT PROPERTY

The War Assets Administration announces a sale of miscellaneous drugs and medical supplies from January 27 to February 16. Sales will be made through War Assets Administration customer service centers which are located in numerous large cities throughout the country. Veterans have certain priorities with respect to the sale. Orders sent to any customer service center must be received on or before February 16.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Butler, Charles L.....New Hope
Kelly, Alexander P. Jr.....Camp Rucker
Moody, Marcus D.....Childersburg
Thames, Arnold F.....Mobile

Arkansas

Easterling, Thomas G.....Chicot
Harper, Edwin O.....Atkadelphia
Harris, Julian L.....Hazen
Hinkle, Richard A.....Conway
Parkerson, Cecil W.....Little Rock

California

Bonoff, Chester P.....Los Angeles
Borden, David G.....Berkeley
Greenberg, Albert K.....San Francisco
Hanson, Elmer F.....Burlingame
Jung, Edmund D.....San Francisco
Lawson, William R.....Pasadena
Lenert, Charles.....Oakland
Mann, Leslie B. Jr.....Los Angeles
Murphy, John C.....San Diego
Rector, Elijah W.....Nevada City
Salin, Rolf W.....Redwood City
Strong, Edward K.....Stanford University
Sutherland, Walter H.....Los Angeles
Williams, Ernest L.....Inglewood
Woodward, Stanley R.....Los Angeles

Colorado

Kerr, Richard C.....Boulder
Waddell, Emmett P.....Denver

Connecticut

Almklov, John R.....New Haven
Jones, James F.....Danielson
Serena, Frank A.....South Norwalk
Stein, Julius D.....Milford

District of Columbia

Cross, Louis L. Jr.....Washington
Daines, Joseph G.....Washington
Litvin, Philip.....Washington
McLeod, Robert N. Jr.....Washington
Taylor, Robert G.....Washington

Florida

Anderson, George H.....St. Petersburg
Ganey, Joseph B.....Bradenton
Price, Morris A.....St. Augustine
Roger, Clarence R. Jr.....St. Augustine
Summerlin, Glenn O.....Gainesville

Georgia

Guy, John C.....Atlanta
Marks, Edward S.....Toccoa
Moon, Jack B.....Augusta
O'Neal, John B. III.....Waycross
Russell, David A. Jr.....Atlanta

Illinois

Barnes, Benjamin A.....Chicago
Chickering, William A.....Chicago
Christian, Joseph R.....Oak Park
Ewart, Fred E. Jr.....Oak Park
Joslyn, Howard P.....Oak Park
Killian, Edgar W.....Chicago
King, Thomas J.....Chicago
Kinney, Edward J.....Dixon
Levett, Harry L.....Chicago
Lininger, Richard E.....Evanston
Murphy, Robert H.....Joliet
Nemecsek, Joseph G.....Chicago
Pfeifferberger, Mather.....Alton
Rosenman, Ray H.....Chicago
Roth, Julius A.....Carlinville
Schneider, Jonas E.....Chicago
Stanon, Roy F. Jr.....St. Louis
Tucker, Sheldon M.....Chicago

Maine

Melendy, Oakley A.....Gardiner

Maryland

Byrne, Robert F.....Silver Spring
Davis, Marvin H.....Baltimore
Guyther, Joseph R.....Mechanicsville
Karzon, David T.....Baltimore
Myers, Joseph C.....Woodlawn
Myers, Myron J.....Baltimore
Ullsperger, John F.....Baltimore

Massachusetts

Crawford, John D.....Cambridge
Gardella, Joseph W.....Arlington
Harris, John W.....Boston
Hoff, Irving.....Holyoke
Lynch, Joseph P. Jr.....Marlboro
Murray, Joseph E.....Milford
Rizzo, Nicholas D.....Brighton
Schlessinger, Paul J. R.....South Attleboro
Whittlesey, Philip.....Newton Center

Michigan

Barone, Charles G.....Highland Park
Castle, Maurice E.....Detroit
Clark, Charles E.....Detroit
Dehlin, James R.....Gladstone
Hallen, Leonard J.....Detroit
Ray, Dean K.....Gobels
Stewart, Lewis L.....Detroit
Torrey, Francis A.....Lake City

Minnesota

Freeman, John G.....St. Peter
Helmsworth, James A.....N. Minneapolis
Hitchcock, Claude R.....Minneapolis
Jones, David G.....Minneapolis
Larson, Paul G.....Montevideo
Litman, Robert E.....Minneapolis
Rotnem, Orville M.....Minneapolis
Salkin, Murray R.....Minneapolis
Sandeno, Morris T.....Kenyon
Schultz, Donald O.....Moose Lake
Wolgarnot, John R.....Albert Lea

Missouri

Goldfarb, Alvin.....St. Louis
Hughes, Gerald E. III.....Kansas City
Jones, Max P.....Stanberry
Joyce, Gerald B.....Kansas City
Klingberg, William G.....St. Louis
Macfarlane, Lloyd W.....St. Louis
Mills, Warren B.....Webster Groves
Moore, Andrew M.....St. Louis
Sudholt, Alfred Felix Jr.....St. Louis
Vivona, Stefano.....St. Louis

Montana

Quinn, James W.....Missoula
Wessell, Maurice S.....Hamilton

Nebraska

Bleicher, Jerome E.....Omaha
Gately, Harold S.....Syracuse
Kratovich, Charles M.....Omaha
Nelson, Wallace W.....Albion
Olson, Leland J.....Palmyra
Snyder, John T.....Nemaha

New Hampshire

Hinkley, Robert I.....Lancaster
Nemiah, John C.....Hanover

New Jersey

Goldstein, Joseph R.....Atlantic City
Greif, Jacob L.....New Brunswick
Kemezis, Vita J.....Kearney
Kosovsky, Harry.....Passaic
Levitzky, Edward.....Rahway
London, Robert D.....Perth Amboy
Orloff, Jack.....Newark
Otvos, Emery G.....Palisade
Perkel, Harold.....Jersey City
Willner, Albert.....Newark

New Mexico

Smith, Jacques M.....Las Vegas

New York

Bien, Edward J.....Mastic Beach
Capers, Ellison V.....Poughkeepsie
Coren, Adrian R.....Brooklyn
Fleischman, Henry.....Astoria, L. I.
Flynn, Frederick J. Jr.....Jamaica
Friend, John W.....Brooklyn
Gelfand, Daniel E.....Bronx
Gemson, Bennett L.....Brooklyn
Green, Robert E.....Yonkers
Greene, Richard W.....Binghamton
Greenfield, Gerald.....Brooklyn
Hagen, Samuel J.....Buffalo
Hartnett, Bernard J.....Moravia
Hood, Robert I.....Corning
Izzo, Gerard N.....Brooklyn
Kelter, Joseph J.....Brooklyn
Koenig, Leonard J.....Ozone Park
Lasser, Richard P.....Brooklyn
Ling, Alexander.....Floral Park, L. I.
Lowenthal, Martin.....Brooklyn
Lundgren, Lawrence E.....Plattsburg
Mazzeo, Vincent P.....Brooklyn
Mond, Irving.....Brooklyn
Montross, Henry E.....New York
Osborn, John J.....Garrison-on-Hudson
Pender, Robert B.....Utica
Pisciotta, Anthony V.....New York
Porrazzo, Andrew P.....Brooklyn
Rechtschaffen, Joseph S.....Brooklyn
Rigney, Thomas G.....Elmurst, L. I.
Ross, Jack F.....Lockport
Rubin, Tobias M.....Yonkers
Russo, Vincent.....Franklin Square
Schmatolia, Ernest.....New York
Schneck, Jerome M.....Forest Hills
Semenoff, Louis.....Catskill
Singiser, James A.....Mount Kisco
Sneid, Philip.....New York
Stannard, Edson L.....Port Washington
Sternberg, Stephen S.....New York
Susselman, Samuel.....Albany
Tripp, Samuel E.....Oswego
Turner, Louis B.....New York
Utell, Milton C.....New York
Walsh, Ambrose G.....Liverpool
West, Byron S.....Sherburne
Wolleben, John E.....Brooklyn

Oregon

Banfield, Ernest E. Jr.....Portland
Bell, Max F.....Portland
Burge, William M.....Portland
Condon, Robert J.....Portland
Cottel, Charles E.....Portland
Holm, Carl L.....Silverton
Lowell, Roy S.....Portland
Merriss, Martin D.....Portland
O'Connor, Owen J.....Clackamas
Page, Lucius K.....Portland
Radding, Jerome.....Portland
Todd, Jerry H.....Portland

Texas

Bettis, Moody C.....Brownwood
Branch, William M. Jr.....El Paso
Brooks, Thomas C.....Waco
Childers, Herschel N.....San Antonio
Evans, Ward.....El Paso
Haley, Raphael R.....Dallas
Kallina, Frederick P.....Garwood
Lang, Garland H. Jr.....Kerrville
McClelland, Gene A.....Gilmer
Smallberg, William A. Jr.....El Paso
Zatopek, Leland F.....Columbus

Canada

Lukens, Theodore J.....Oshawa, Ont.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

COLORADO

University Appointments.—Dr. Frank Princi, Denver, has been appointed director of the Division of industrial medicine and assistant professor of medicine at the University of Colorado Medical Center. Dr. Princi is a graduate of the University of Colorado School of Medicine.

Dr. Stuart G. Smith, Washington, D. C., has joined the medical center staff to teach in the department of anatomy. Dr. Smith is a graduate of Western Reserve Medical School, Cleveland.

Open Ward for Tuberculous Patients.—A new ward for the care of patients with tuberculosis will be opened at Colorado General Hospital, Denver, about February 1 through alterations of a ward used for the care of patients with poliomyelitis for the past year and a half. About twenty-eight patients can be accommodated, priority being given to those requiring surgical operation. Provision for the ward was made by the legislature as the first step to be taken by the state for hospital care of tuberculous patients. Selection of the staff is being made. The director of nursing at Colorado General Hospital is particularly desirous of hearing from nurses and attendants interested in working in this field.

CONNECTICUT

Cancer Conference.—Connecticut's first cancer conference for physicians will be held at the Hotel Taft, New Haven, Thursday, March 25. The conference is being arranged by the Connecticut Cancer Society with the cooperation of the state medical society. The program will present well known national speakers who will discuss cancer with special emphasis on early detection by family physicians and the means available for early treatment.

Appointed to Examining Board.—Dr. Louis P. Hastings, West Hartford, was recently appointed to the Connecticut Medical Examining Board to succeed Dr. Charles J. Bartlett, New Haven, resigned. Dr. Hastings is president of the Hartford County Medical Association and has been on the full time staff of St. Francis Hospital, Hartford, since 1929. Dr. Bartlett was president of the board at the time of his resignation, and his membership was continuous for more than twenty years. He was appointed professor of pathology at Yale University School of Medicine in 1897 and was named professor emeritus in 1917. He has been pathologist at the Grace-New Haven Community Hospital since 1918.

ILLINOIS

Report on Communicable Diseases.—The Illinois state health department reports that about 12 in each thousand of the state's population suffered an attack of one or another of the notifiable diseases during 1947. In the previous year the rate was 16 per thousand. Venereal diseases were responsible for almost half of all cases reported, although figures are below those for venereal disease reported for 1946. Smallpox and scarlet fever fell to the lowest reported incidence on record in the state; diphtheria case reports totaled 174 as compared with 469 for 1946; tuberculosis increased to 7,915 cases as against 7,431 in 1946, an increase attributed to "effective case-finding efforts"; and typhoid accounted for 137 cases as against 106 for 1946.

Chicago

Research on Amino Acid Therapy.—The Hektoen Institute for Medical Research at Cook County Hospital has received its annual grant of \$25,000 from the Biochemical Division of the Interchemical Corporation. This grant is to support research on intravenous amino acid therapy and on the role of individual amino acids in human metabolism. One objective of the research program to be pursued is the formulation of an amino acid mixture to be given by vein that will best satisfy physiologic requirements for nitrogen balance.

Fellowship in Allergy.—The Division of Allergy, Northwestern University Medical School, announces a fellowship for training in allergy. Candidates should have experience in research or in basic sciences. The fellow will receive training

in clinical allergy and in research and may register for an M.S. degree. The stipend is \$1,800 to \$3,000. Similar training, without stipend, is also offered to a candidate whose qualifications do not meet fellowship requirements. For information address Dr. Samuel M. Feinberg, Northwestern University Medical School, Chicago.

Society News.—The North Side Branch Chicago Medical Society will be addressed by the following speakers February 5 in the Drake Hotel at 8 p.m.:

Dr. George F. Lull, Secretary and General Manager of the American Medical Association, Chicago, The American Medical Association and Its Relation to the Public.

Dr. Benjamin M. Baker Jr., Johns Hopkins University, Baltimore, Clinical Aspects of Some Diseases of Collagen Degeneration.

Dr. William F. Rieholf Jr., Johns Hopkins University, Baltimore, Surgical Treatment of Hyperparathyroidism.

The scientific program will be preceded with a fellowship gathering at 5:30 and dinner at 6:30 p.m. Reservations are required.

This Week in Chicago Medicine.—The Chicago Medical Society has inaugurated a weekly mimeographed publication entitled *This Week in Chicago Medicine*, designed to keep the profession posted and to aid out of town physicians who wish to visit clinics, conferences, round tables or other meetings. The society is sending copies to all medical libraries, medical schools and city medical societies in the country; to all Illinois hospitals and hospitals of larger cities in states adjacent to Illinois. Loop hotels have requested copies to give to guests who are physicians. Any doctor planning a trip to Chicago may secure copies of this bulletin by writing to the Chicago Medical Society, 30 North Michigan Avenue, Chicago.

KENTUCKY

Society of Anesthesiology.—The newly organized Kentucky Society of Anesthesiology met in Louisville December 3 and elected Dr. Samuel S. Clark, Louisville, president; Dr. Joseph S. Parker, secretary, and Dr. German P. Dillon Jr., treasurer. The society, which has twenty-eight charter members, will meet once a month in the interest of progress and research in anesthesiology.

MICHIGAN

Postgraduate Courses at Wayne.—Wayne University College of Medicine, Detroit, is offering a full time course in basic ophthalmology from January 15 to June 15. Enrolment in the course is limited to twenty. The fee is \$300. The college is also offering a postgraduate course in the basic sciences from March 15 to June 12.

Appointments to State Board.—Three new appointments to the State Board of Registration in Medicine, subject to senate approval, are Drs. Cyrus B. Gardner Lansing; Leland E. Holly, Muskegon, and Cecil Corley, Jackson. Reappointed for the four year term are Dr. David C. Eisele, Ironwood, and Franklin V. Troost, Holt.

MINNESOTA

Personal.—Dr. Fred W. Wittich, Minneapolis, has been notified by the state department that he has been awarded a diploma for allergy lectures delivered at the Instituto Brasileiro de Historia in Rio de Janeiro, Brazil, in December 1946.

Gift of Annual Lectureship.—The Minnesota Graduate Club and Alpha Xi Undergraduate Chapter of the Phi Delta Epsilon fraternity will present an annual lectureship to the University of Minnesota Medical School, Minneapolis, at a banquet February 26. The first lecture will be given after the banquet in the Medical Sciences Amphitheater of the university by Dr. William Roemmich, Oak Terrace, U. S. Public Health Service, on "The 1947 Chest X-Ray Survey of Hennepin County."

NEBRASKA

Society Election.—The Omaha Mid-West Clinical Society has elected the following Omaha physicians as officers for 1948: Roy W. Fouts, president; Warren Thompson, president-elect; John M. Thomas, secretary and director of clinics, and Louis E. Moon, treasurer. October 25 to 29 are the dates for the 1948 meeting.

University Appointments.—Recent appointments to the faculty of Creighton University School of Medicine, Omaha, include Dr. A. S. Black Jr., assistant in surgery (plastic surgery); Dr. C. F. Lowry, assistant in medicine; D. M. C. Reilly, Ph.D., instructor in biochemistry, and J. M. Severens, Ph.D., assistant professor of bacteriology.

Dr. Bennett Leaves for California.—Dr. Abram E. Bennett, for many years chairman of the department of neuropsychiatry at the University of Nebraska College of Medicine, Omaha, will become affiliated with the Herrick Memorial Hospital, Berkeley, Calif., on March 1. The hospital is opening a new forty bed psychiatric department.

NEW YORK

Ordinance on Atmospheric Pollution.—Niagara Falls is the first city in the United States to adopt an ordinance providing complete coverage for all types of atmospheric pollution—dusts, gases, fumes, mists, vapors, smoke and odors. The ordinance is also unique in setting up an air pollution control board to keep rules flexible. The U. S. Public Health Service, Industrial Hygiene Division, assisted in this project at the request of the city and state.

Professional Recruitment and Training.—Dr. Franklyn B. Amos, Delmar, has been appointed director of the state health department's new office of professional recruitment and training, effective January 1. He will supervise programs to train physicians, nurses, engineers, dentists and health educators for public health work. Dr. Amos, a graduate of Syracuse University College of Medicine, 1931, has been with the state health department since 1935 and has been director of local health administration since 1940.

Centennial of Community Service.—The Community Service Society is celebrating its centennial year with a series of scientific conferences, bringing together leaders in the fields of medicine, psychiatry, the social sciences, public health and education beginning January 22 and continuing through April. The theme is "The Family in Tomorrow's World." Dr. Thomas M. French, Chicago, spoke on "Personal Interaction and Growth in Family Life" at the first of three symposiums at the Hotel Roosevelt on January 29. On January 30 Dr. Marianne Kris, New York, spoke on "Implications (of Child Rearing) for Family and Community"; Dr. Nathan W. Ackerman, New York, on "Adaptive Problems of the Adolescent Personality," and Dr. Viola Bernard, New York, "Implications (of Adolescence) for Family and Community."

The Community Service Society is said to be the largest private nonsectarian family and health agency in the United States. It is the modern outgrowth of two pioneer organizations, the Association for Improving the Condition of the Poor, incorporated in 1848, and the Charity Organization Society, founded in 1882.

New York City

Strausberg Memorial Lecture.—The first Samuel Strausberg Memorial Lecture of the Beth-El Hospital, Brooklyn, will be delivered by Dr. William Goldring, associate professor of medicine at the New York University College of Medicine, February 18 in the Kings County Medical Society building. Dr. Goldring's topic will be "Present Status of Medical and Surgical Treatment of Hypertension." The lecture is in memory of the late Mr. Strausberg, president of the hospital, 1941 to 1946.

Research on Problems of Aging.—Columbia University, New York, has been awarded a grant of \$31,500 by the Rockefeller Foundation for "investigation of the interaction of hereditary and environmental factors in relation to: problems of aging." The grant, a renewal of an original gift made by the foundation in 1945 to the New York State Psychiatric Institute, a part of the Columbia-Presbyterian Medical Center, will carry on a three year or longer investigation on the health status and activities of twins over 60 years of age. A number of state and private agencies are cooperating. There is still a need for twins of more than 60 years of age in New York City to participate in the study. Those interested are asked to communicate with the Department of Psychiatry, 722 West 168th Street, New York 32.

NORTH CAROLINA

Narcotic Violation.—The Bureau of Narcotics, Washington, D. C., reports that Dr. Wiley R. Young, Angier, N. C., pleaded guilty to violation of the federal narcotic law in the U. S. District Court at Greensboro on Dec. 2, 1947. His sentence of three years was suspended; he was placed on probation for a period of five years and was fined \$500.

UTAH

Utah Medical Foundation Lecture.—Dr. Edith L. Potter, Chicago, will deliver the second series of the annual Obstetric and Gynecological Lectureship on "Immunization to the Rh Factor" and "Etiology of Maldevelopment of the Human Fetus" at the University of Utah, Salt Lake City, February 16 and 17.

WEST VIRGINIA

First Woman to Head Component Society.—Dr. S. Elizabeth McFetridge, Shepherdstown, has been elected president of the Eastern Panhandle Medical Society, the first woman to be named president of a component society of the West Virginia State Medical Association. In addition to her specialty of anesthesiology, Dr. McFetridge is engaged in general practice. She was recently named chairman of the association's Committee on Maternal Welfare.

Hunter Memorial Library.—Plans have been approved for establishing the Hunter Library at the Herbert J. Thomas Memorial Hospital, South Charleston, in memory of Dr. J. Ross Hunter, Charleston, who was president of the staff at the time of his death on Dec. 31, 1947. Contributions are being accepted by Mr. T. W. Patterson, hospital administrator. The long-range plan will probably include a circulating library for patients as well as the medical library proposed for the use of the staff.

Licensure to Practice.—Under a new regulation of the public health council a qualified applicant for licensure to practice medicine in West Virginia will hereafter be permitted to practice in a specified area during the interim between the filing of his application and the date of the next regular meeting of the public health council, at which time he will be required to appear for examination. Graduates of unclassified foreign medical schools will be permitted to serve as interns or residents in private hospitals and state institutions, provided their services are requested by the proper officials prior to employment and provided that they present their credentials to the public health council in regular session and receive permission so to serve. However, they will not be permitted to serve outside the hospitals or institutions. This regulation does not in any way rescind a previous regulation of the council, which bars graduates of Class B schools from practice in hospitals in this state after July 1, 1948.

GENERAL

Director of Information.—Joseph Hirsh, New York, associate director, Research Council on Problems of Alcohol, has been granted a leave of absence to assume the position of director of public information, World Health Organization, Interim Commission, of the United Nations. He participated in the fifth session of the World Health Organization, Interim Commission, in Geneva, Switzerland, January 1948.

Appoint Director of Public Health Nursing.—Miss Anna Fillmore, R.N., New York, has been appointed general director of the National Organization for Public Health Nursing to succeed Miss Ruth Houlton, R.N. Miss Fillmore has been with the Visiting Nurse Service of New York since 1940. Previously she was director of the Bureau of Public Health Nursing in the Utah State Health Department and assistant director of the American Nurses Association of New York.

Dr. Talbott to Edit Medicine.—Dr. John H. Talbott, professor of medicine, University of Buffalo Medical School, and head of the department of medicine, Buffalo General Hospital, has succeeded Dr. Alan M. Chesney, Baltimore, as managing editor of *Medicine*. Dr. Talbott received the M.D. degree from Harvard Medical School in 1929, and from 1931 to 1946 was associated with that school and the Massachusetts General Hospital in various capacities, being associate in medicine from 1935 to 1946.

National Foundation's Decade of Progress.—Basil O'Connor, head of the National Foundation for Infantile Paralysis, has reported that the organization in its first decade has spent \$35,000,000 in medical care for victims of poliomyelitis and \$13,000,000 for research on the disease. It has helped 88,000 patients financially, obtained admission for patients in four hundred and seventeen hospitals, started five hundred and forty research and education projects and trained thirteen hundred professional workers in the treatment of patients with poliomyelitis.

American Physicians Exhibit Art in Argentina.—On invitation from the Argentine government (*THE JOURNAL*, Sept. 20, 1947, p. 172) twenty-two physicians of the American Physicians Art Association submitted pieces in an exhibit of fine arts in Buenos Aires Nov. 24, 1947. Gold medals were awarded to Dr. Max Thorek, Chicago, and Dr. Homer Wheelen, Seattle, Wash. The art pieces were shipped prepaid by air freight through the courtesy of Mead Johnson & Company. Members of the American Physicians Art Association and the American Physicians Literary Guild have been invited to exhibit again at the next art show. A return invitation has been extended for the artists and literary physicians of Buenos Aires to exhibit in Chicago next June.

Lynch Memorial Essay Contest.—The Pacific Coast Obstetrical and Gynecological Society will hold its second Frank W. Lynch Memorial Essay Contest during the coming year. It is open to physicians who have been in practice for less than ten years or who have not been certified by the American Board of Obstetrics and Gynecology, Inc. Any topic may be selected in the obstetric or gynecologic field and may cover either clinical investigations or laboratory research. The prize for the best essay submitted is \$100, and the winner will present his paper at the fall meeting of the society. Essays should be in the hands of the secretary, Dr. R. Glenn Craig, 490 Post Street, San Francisco 2, by August 1. Dr. Frank Lynch was first president of the society.

Conference for Children with Orthopedic Defects.—The National Foundation for Infantile Paralysis is sponsoring a conference for the improvement of educational opportunities for children with orthopedic defects who receive their schooling in hospitals and convalescent centers. The conference is being held at the Hotel Ambassador, Atlantic City, N. J., February 26 and 27 in conjunction with the annual convention of the American Association of School Administrators. Teachers in the two hundred and fifty-seven treatment centers of the country that have academic facilities, physicians, school administrators, hospital administrators, staffs of teacher-training centers, nurses, physical and occupational therapists, medical social workers and education program leaders of civic and women's clubs are being invited to attend. Reservations should be made directly with the Hotel Ambassador.

Dr. Ruggles Heads Mental Hygiene Committee.—Dr. Arthur H. Ruggles, Providence, R. I., has been elected president of the National Committee for Mental Hygiene to succeed Eugene Meyer, publisher of the *Washington Post*. Dr. Ruggles resigned January 1 from the superintendency of Butler Hospital, a position that he held for twenty-six years. The board of trustees retained Dr. Ruggles as general consultant. A graduate of Harvard Medical School, Boston, 1906, Dr. Ruggles was appointed assistant superintendent at the hospital in 1909 and superintendent in 1922. He is a consultant in mental hygiene in the department of university health, lecturer in psychiatry at Yale University, New Haven, Conn., and a consultant, U. S. Public Health Service. He is a former president of the American Psychiatric Association, the New England Society for Psychiatry and the Rhode Island Medical Society.

British Journals Available in the United States.—The British Medical Society has appointed Grune & Stratton, Inc., medical publishers, 381 Fourth Avenue, New York 16, as sole agents for the United States of all its periodical publications, beginning January 1948. The journals are the *British Medical Journal*, published weekly, at \$14 a year; *Abstracts of World Medicine*, published monthly, \$13 a year; the *Abstracts of World Surgery, Obstetrics and Gynecology*, published monthly, \$9 a year, and the following quarterlies at \$5.50 a year: *Annals of the Rheumatic Diseases*; *Archives of Disease in Childhood*; *British Heart Journal*; *British Journal of Industrial Medicine*; *British Journal of Pharmacology and Chemotherapy*; *British Journal of Social Medicine*; *British Journal of Venereal Diseases*; *Journal of Clinical Pathology*; *Journal of Neurology, Neurosurgery and Psychiatry*, and *Thorax*.

Dr. Ida Bengtson Receives Typhus Commission Award.—Ida A. Bengtson, Ph.D., formerly of Bethesda, Md., has been awarded the United States of America Typhus Commission Medal for exceptionally meritorious service during 1943 to 1945 in the investigation and control of rickettsial infections. The award to Dr. Bengtson was made shortly before the recent disbandment of the wartime commission, but presentation was postponed until her return from an extended visit in the West. While associated with the commission, Dr. Bengtson "contributed to the improvement of typhus vaccine, the development of the complement fixation tests and the differentiation of organisms causing various types of typhus fevers." In the ten years before her retirement from the National Institute of Health in January 1946, Dr. Bengtson devoted her investigations to the rickettsial group of diseases and was among the first to study the cultivation of rickettsias in eggs. She was with the U. S. Public Health Service for twenty-six years.

Fellowships Available in Public Health.—Fellowships leading to a master's degree in public health in the field of health education are again being offered to any qualified citizen of the United States between the ages of 22 and 40. Funds are available through a grant from the National Foundation for Infantile Paralysis. Candidates must hold a bachelor's degree and must be able to meet the entrance requirements of the accredited school of public health of their choice. In addition to the bachelor's degree courses in the biologic sciences, sociol-

ogy and education are required. Training in public speaking, journalism and psychology and work in public health or a related field is considered desirable. The fellowship consists of eight or nine months' academic work, which begins with the fall term in 1948, and three months of supervised field experience in community health education activities in a local health department. Veterans are encouraged to apply and will be paid the difference between their subsistence allowance under the GI Bill of Rights and the monthly stipend of \$100 for single veterans or \$150 for married veterans. Employees of state or local health departments are not eligible, since federal grants-in-aid are provided through the states for such training. Information may be obtained from the National Foundation for Infantile Paralysis, 120 Broadway, New York 5.

LATIN AMERICA

Two New Medical Journals.—*Jornada Medica*, a monthly Argentine medical journal with headquarters at Calle Cordoba 2218, Buenos Aires, recently appeared. Dr. Horacio Basabe is the editor. *Revista Panamericana de Medicina y Cirugia del Torax*, a Spanish quarterly journal with summaries in English, with headquarters at Calle de Amazonas 96, Mexico, D. F., Mexico, recently appeared with Dr. Donato G. Alarcón of that city as editor.

Pan-American Doctors' Club First Scientific Session.—From February 28 to March 1 the Pan-American Doctors' Club will hold its first scientific sessions at the club home, San Miguel Regla, Hidalgo, Mexico. There will be papers on health problems and opportunities for members and guests to enjoy recreational activities. Housing accommodations are limited, but a few nonmember guests can be cared for if reservations are made in advance. For information address Dr. Clarence A. Mills, Secretary, Cincinnati General Hospital, Cincinnati, Ohio.

FOREIGN

International Society of Pathologists.—An international association of societies devoted to clinical pathology was established at meetings in Paris, France, November 21-22 in the course of the first International Congress of the Société Française de Biologie Clinique. Delegates and observers attended from Belgium, Czechoslovakia, Denmark, France, Great Britain, Greece, Italy, Peru and the United States. A provisional constitution drawn in general conformance with the rules established by UNESCO for its associated international bodies establishes the governing body of the International Federation as a council or commission of the delegates from the national member societies. The council acts through an Executive Committee of six members. The English and French texts of the statutes will come up for ratification at a meeting of the council, which it is hoped to hold next summer. The conference elected officers as follows: Dr. Sidney C. Dyke, Wolverhampton, England, president; Drs. D. Durupt, France, and Josef Ungar, Czechoslovakia and England, secretaries; Professor Raoul Kourilski, France, vice president, and Dr. W. H. McMenemey, England, treasurer. The second office of vice president was left vacant in the hope that it might be filled by a representative of the United States. The conference defined the term "clinical pathology" as consisting in "the application of pathology and all its related sciences to clinical medicine."

National societies devoted to clinical biology as defined are invited to communicate with the secretary-general, Dr. D. Durupt, 20 Rue de la Pompe, Paris, or the assistant secretary, Dr. J. Ungar, Claxo Laboratories, Greenford, Middlesex, England.

Marriages

JOHN BLACKWELL SUTPHIN, Trenton, N. J., to Miss Caroline Gibbs Hunter in Columbia, S. C., Oct. 17, 1947.

GEORGE CARTWRIGHT ADICKES, York, S. C., to Miss Floride Cantey Des Champs in Columbia, Oct. 18, 1947.

EDWARD G. HASKELL JR., Jacksonville, Fla., to Miss Gale Deane Shumate of Bluefield, W. Va., recently.

JAMES KEITH PALMER, Sumter, S. C., to Miss Nancy Louise Buie of Rochester, Minn., Sept. 27, 1947.

ANGELA B. ADAMS to Dr. CHESTER R. JABLONOSKI, both of Cleveland, Nov. 12, 1947.

ALLEN WIDOME to Miss Fay Berger, both of Washington, D. C., Feb. 22, 1947.

ROBERT W. TUFFT to Miss Dorothy Galt, both of San Francisco, recently.

Deaths

Max Pinner, Berkeley, Calif.; born in Berlin, Germany, Nov. 28, 1891; Eberhard-Karls-Universität Medizinische Fakultät, Tübingen, Württemberg, Germany, 1920; became instructor in pathology and bacteriology at the University of Illinois College of Medicine in Chicago, later director of laboratories of the Maybury Sanatorium in Northville, Mich., and pathologist at the Herman Kiefer Hospital in Detroit; director of laboratories and research at the Desert Sanatorium in Tucson, Ariz., from 1930 to 1935; diagnostic pathologist for the state tuberculosis hospitals of New York; from 1938 to 1946 on the staff of the Montefiore Hospital for Chronic Diseases in New York; affiliated with Montefiore County Sanatorium in Bedford Hills, N. Y.; served as clinical professor of medicine at Columbia University College of Physicians and Surgeons in New York; specialist certified by the American Board of Pathology; member of the American Sanatorium Association, Society for Experimental Biology and Medicine, American Association for Thoracic Surgery and the American Association for Pathologists and Bacteriologists; fellow of the American College of Physicians; in 1946 awarded the Trudeau Medal of the National Tuberculosis Association; served in the German Army during World War I; author of "Pulmonary Tuberculosis in the Adult"; editor of the *American Review of Tuberculosis*; died January 7, aged 57.

David Robert Climenko, Fort Bayard, N. Mex.; born in New York Aug. 28, 1906; University of Edinburgh Faculty of Medicine, Scotland, 1931; assistant in physiology at the University of Edinburgh from 1929 to 1932; assistant professor of physiology and pharmacology, University of Alberta, Canada, from 1932 to 1934; lecturer in pharmacology at Cornell University in New York, 1934-1935; pharmacologist for the American Cyanamid Company in Stamford, Conn., from 1935 to 1940; pharmacologist for the Winthrop Chemical Company, Rensselaer, N. Y., from 1940 to 1942; associate in biochemistry from 1940 to 1943, later instructor in medicine and research associate in medicine at the Albany Medical College in Albany, N. Y.; served during World War II; affiliated with the Veterans Administration Hospital; died recently, aged 41.

Sidney Isaac Schwab ♂ St. Louis; born in Memphis, Tenn., Nov. 22, 1871; Harvard Medical School, Boston, 1896; later studied at universities in Paris, Berlin and Vienna; professor emeritus of clinical neurology at the Washington University School of Medicine; member and past president of the American Neurological Association; formerly councilor of the medical council of the U. S. Veterans Bureau in Washington; served overseas during World War I; affiliated with St. Louis Children's and Maternity Hospital, Jewish Hospital and the Barnes Hospital; author of "The Adolescent: His Conflicts and Escapes"; on the editorial staff of the *Journal of Nervous and Mental Disease*; died in Boston Nov. 12, 1947, aged 75, of burns.

Earl Cooper, Augusta, Ill.; born in 1879; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1905; member of the American Medical Association; chairman of the county board of assistance; past president of the Hancock County Medical Society; president of the town board of health; physician for the county Selective Service Board during World War II; formerly affiliated with the Illinois Soldiers' and Sailors' Home in Quincy, where he was on the staff of St. Mary's Hospital; served on the staff of the Graham Protestant Hospital in Keokuk, Iowa; died Nov. 5, 1947, aged 68, of coronary thrombosis.

Earl Edward Van Derwerker ♂ New York; Columbia University College of Physicians and Surgeons, New York, 1917; assistant clinical professor of orthopedic surgery at his alma mater; specialist certified by the American Board of Orthopedic Surgery; member of the American Academy of Orthopedic Surgery; fellow of the American College of Surgeons; an officer during World War I; served on the staff of Blythedale Home in Hawthorne, Lawrence Hospital in Bronxville and the Hospital for Special Surgery; died in Newtown, Conn., Nov. 2, 1947, aged 57, of coronary thrombosis.

Louis Storrow Greene ♂ Washington, D. C.; born in 1872; University of Virginia Department of Medicine, Charlottesville, 1895; specialist certified by the American Board of Ophthalmology; served as associate professor of ophthalmology at the Georgetown University School of Medicine; past president of the American Ophthalmological Society; fellow of the American College of Surgeons; head of the eye examining service for the draft board during World War I; affiliated with the Episcopal Eye, Ear and Throat Hospital; died Nov. 12, 1947, aged 74, of coronary thrombosis and cerebral hemorrhage.

Louis Ferdinand Alrutz ♂ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; past president of the Aux Plaines branch of the Chicago Medical Society; served on the staff of West Suburban Hospital in Oak Park; died Nov. 26, 1947, aged 71, of coronary thrombosis.

John Baxter Bain, Lawrence, Mass.; Harvard Medical School, Boston, 1902; member of the American Medical Association; for many years affiliated with Lawrence General Hospital; died in New England Deaconess Hospital, Boston, recently, aged 68, of uremia and myocardial insufficiency.

Harvey M. Beaver, Kansas City, Mo.; Louisville (Ky.) Medical College, 1888; at one time on the faculty of Harvey Medical College in Chicago and the College of Physicians and Surgeons in Kansas City, Kan.; formerly practiced in Huntington, Ind., where he served as county coroner; died recently, aged 87, of interstitial nephritis.

George Crocket Becket, Lakeville, Conn.; Cornell University Medical College, New York, 1900; served on the staff of the Essex County Memorial Hospital in East Orange, N. J.; died in the Hudson City (N. Y.) Hospital Nov. 11, 1947, aged 79, of pulmonary edema and cerebral hemorrhage.

Joseph Jackson Blitch, Yonkers Island, S. C.; University of the South Medical Department, Sewanee, Tenn., 1901; died in Charleston recently, aged 79.

Charles Arthur Brake, Norman, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1917; member of the American Psychiatric Association; served during World War I; assistant professor of psychiatry at the University of Oklahoma School of Medicine; affiliated with the Central Oklahoma State Hospital; died recently, aged 52, of cerebral hemorrhage.

James Cooper Bright, Fall River, Mass.; Jefferson Medical College of Philadelphia, 1907; member of the American Medical Association; died in the State Hospital, Taunton, Nov. 12, 1947, aged 74, of arteriosclerotic heart disease.

James Blaine Brown, Pell Lake, Wis.; Loyola University School of Medicine, Chicago, 1916; died Nov. 8, 1947, aged 63, of acute coronary occlusion.

William Turner Carstarphen ♂ Westport, Conn.; Jefferson Medical College of Philadelphia, 1904; member of the Medical Society of the State of New York; at one time on the faculty of Wake Forest (N. C.) College; served during World War I; chief medical officer at the Japanese-American camp in Arkansas and Colorado during World War II; died in the Kingston (Ontario) General Hospital Nov. 2, 1947, aged 72, of carcinoma of the rectum.

Simeon Cohen, Meriden, Conn.; Middlesex College of Medicine and Surgery, Cambridge, Mass., 1921; died in the Meriden Hospital Nov. 2, 1947, aged 52 of malignancy of right testicle.

Ross Alvah Cooper, Carmel, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; member of the American Medical Association; served during World War I; member of the staff of the Methodist Hospital in Indianapolis, where he died Nov. 8, 1947, aged 65, of cerebral hemorrhage.

James Harry Cox, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1902; died in the Veterans Administration Hospital, Dearborn, Nov. 24, 1947, aged 75, of arteriosclerotic heart disease.

Harry Lee D'Arms, Hector, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1892; served as county coroner; died recently, aged 79, of uremia.

Charles A. Davis, Kennedy, Ala.; Birmingham Medical College, 1912; member of the American Medical Association; died recently, aged 63.

Jules Jehin De Prume, New York; Université de Paris Faculté de Médecine, France, 1893; Laval University Faculty of Medicine, Quebec, Canada, 1894; affiliated with the Misericordia Hospital; died in the French Hospital Nov. 11, 1947, aged 77, of carcinoma of the large intestine.

Robert Cecil Donham, Beverly Hills, Calif.; University of Southern California School of Medicine, Los Angeles, 1933; member of the American Medical Association; served an internship and residency at the Los Angeles County General Hospital in Los Angeles, where he was a member of the surgical staffs of the California Lutheran and the Methodist hospitals; died recently, aged 43.

John Rose Dyson ♂ Hazleton, Pa.; Medico-Chirurgical College of Philadelphia, 1897; served on the staff of the Hazleton State Hospital; died Nov. 18, 1947, aged 73, of coronary thrombosis.

Rebecca Mortimer Evans, Denton, Texas; Northwestern University Woman's Medical School, Chicago, 1902; died Oct. 30, 1947, aged 75, of cerebral hemorrhage.

Victor Finsand @ San Francisco; University of Illinois College of Medicine, Chicago, 1916; served during World War I; died Nov. 2, 1947, aged 58, of cerebral hemorrhage.

Solomon Greenspahn, Chicago; Rush Medical College, Chicago, 1889; member of the American Medical Association; medical director and treasurer of the American Hospital; died Nov. 17, 1947, aged 80, of coronary thrombosis.

Frank West Harrah @ Columbus, Ohio; Cornell University Medical College, New York, 1920; member of the American Urological Association and the Columbus Academy of Medicine; fellow of the American College of Surgeons; affiliated with Grant, White Cross and Mount Carmel hospitals; died Nov. 6, 1947, aged 55, of cerebral hemorrhage.

Joseph A. Heintzelman, Philadelphia; Georgetown University School of Medicine, Washington, D. C., 1902; died in the Lankenau Hospital Nov. 7, 1947, aged 69, of subacute bacterial endocarditis and bronchopneumonia.

Howard Crosby Hoff, New York; Columbia University College of Physicians and Surgeons, New York, 1907; served on the staffs of West Park and St. Elizabeth's hospitals; died Nov. 21, 1947, aged 63, of coronary thrombosis.

Tarlton Ambrose Hood, Garnett, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1897; member of the American Medical Association; served overseas during World War I; served as county health officer, member of the board of education and chamber of commerce; died Nov. 3, 1947, aged 75, of undulant fever.

William W. Hume, Beckley, W. Va.; University of Virginia Department of Medicine, Charlottesville, 1901; member of the American Medical Association; served as vice president of the West Virginia Public Health Association; for many years county health officer; died Nov. 4, 1947, aged 81, of pneumonia.

J. Newton Hunsberger @ Norristown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1889; member of the House of Delegates of the American Medical Association from 1923 to 1943; served as chairman of the board of trustees of the Montgomery County Medical Society; past president of the Valley Forge Historical Society; affiliated with the Montgomery Hospital; died Nov. 1, 1947, aged 80, of cerebral hemorrhage.

Ernest Hart Judd @ Springfield, Mass.; Tufts College Medical School, Boston, 1912; medical consultant at the Springfield Hospital; died recently, aged 62, of coronary occlusion.

Dillon James Kennington @ Michigan City, Ind.; Indiana University School of Medicine, Indianapolis, 1937; assistant physician at the Indiana State Prison Hospital; on the staff of St. Anthony's Hospital, where he died Nov. 2, 1947, aged 35, of heart disease.

Edmund Carl Konrad, Cleveland; University of Wooster Medical Department, Cleveland, 1908; served during World War I; affiliated with the Lutheran, Evangelical Deaconess, Grace and Charity hospitals; died recently, aged 63, of coronary thrombosis.

Martin Kutscher @ New York; born in Stapleton, N. Y., Aug. 22, 1883; Columbia University College of Physicians and Surgeons New York, 1905; clinical professor of medicine and associate attending physician at the New York Polyclinic Medical School and Hospital; member of the American Heart Association and the Association for the Study of Internal Secretions; served on the staffs of the City, Lebanon and Midtown hospitals; died recently, aged 64, of myocardial infarction.

Alfons Frederick Landeker @ New York; Ludwig-Maximilians-Universität Medizinische Fakultät, München, Bavaria, Germany, 1911; died recently, aged 61, of myocarditis.

Edwin F. Landy, Cincinnati; Medical College of Ohio, Cincinnati, 1891; formerly on the faculty of his alma mater; veteran of the Spanish-American War; died Nov. 21, 1947, aged 79, of cerebral arteriosclerosis.

William James Larkin, Chicago; Rush Medical College, Chicago, 1922; member of the American Medical Association; affiliated with St. Francis Hospital in Evanston, Ill.; died in Galesburg, Ill., Nov. 24, 1947, aged 65, of coronary sclerosis.

Lyder Laurits Laugeson, San Diego, Calif.; University of Minnesota Medical School, Minneapolis, 1929; member of the American Medical Association; served during World War II; died Nov. 11, 1947, aged 44, of nephrosis and cirrhosis of the liver.

E. Oscar Lindenmuth @ Indianapolis; Medico-Chirurgical College of Philadelphia, 1906; died in Methodist Hospital recently, aged 75, of uremia and prostatic hypertrophy.

Charles Oscar Lindstrom @ Eagle River, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; graduate in pharmacy; formerly vice president and on the staff of Columbus Hospital in Chicago; health officer; died Nov. 3, 1947, aged 72, of heart disease and pneumonia.

James A. Long, Oxford, Ohio; University of Louisville (Ky.) Medical Department, 1892; member of the American Medical Association and the Indiana State Medical Association; for many years secretary of the board of health in Anderson, Ind.; died in Mercy Hospital, Hamilton, Ohio, Nov. 9, 1947, aged 87, of cardiovascular renal disease.

Leo Martin Maguire, Minneapolis; John A. Creighton Medical College, Omaha, 1912; lieutenant colonel, medical corps, Army of the United States, affiliated with the Veterans Administration during World War II; at the time of his death medical officer for Veterans Administration; died Nov. 10, 1947, aged 59, of injuries received when he fell through a trap door at a hunting club near Minneapolis.

Reuben Maurits @ Grand Rapids, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; member of the American Society of Anesthetists; past president of the Grand Rapids Society of Anesthesiology, which he helped organize; served on the staffs of Butterworth Hospital and Blodgett Memorial Hospital, where he died Nov. 11, 1947, aged 77, of subarachnoid hemorrhage and arteriolar nephrosclerosis.

William Dennis McClung, Huntington, W. Va.; College of Physicians and Surgeons, Baltimore, 1907; served in the U. S. Public Health Service during World War I; formerly superintendent of the Spencer (W. Va.) State Hospital and the Huntington State Hospital; died Nov. 2, 1947, aged 71, of injuries received in a fall from a moving automobile at Dickson.

Charles Hugo McKenna, Chicago; Northwestern University Medical School, Chicago, 1913; member of the American Medical Association; fellow of the American College of Surgeons; affiliated with Holy Cross Hospital; died recently, aged 60, of bronchogenic carcinoma of the lung.

Neill Henry McLeod Jr., Raleigh, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1930; member of the American Medical Association; served during World War II; died recently, aged 42, of heart disease.

Clarence Sherman Massey, Wadesboro, N. C.; Howard University College of Medicine, Washington, D. C., 1925; died recently, aged 48, of pneumonia.

James Graham Maxwell, Reno, Nev.; Colorado School of Medicine, Boulder, 1897; died in a hospital at Colorado Springs, Colo., recently, aged 78, of pneumonia.

Diedrich Janssen Meents @ Fort Madison, Iowa; State University of Iowa College of Medicine, Iowa City, 1907; took postgraduate work at Harvard, Berlin and Vienna; at one time assistant professor of pathology and bacteriology at the State University of Iowa; died Nov. 6, 1947, aged 69, of coronary occlusion.

Arthur Nourse Meloy, Washington, D. C.; George Washington University School of Medicine, Washington, D. C., 1905; died in the Providence Hospital Nov. 1, 1947, aged 75, of subdural hematoma.

George Washington Michell @ Peoria, Ill.; Rush Medical College, Chicago, 1902; medical director of the Michell Farm and the Michell Sanatorium; died Nov. 17, 1947, aged 71, of cerebral hemorrhage.

Philip Earl Moody, Detroit; Detroit College of Medicine, 1902; served on the staffs of the Harper, Crittenden and Providence hospitals; died Nov. 11, 1947, aged 68, of coronary thrombosis.

Hugh Montgomery Orr, La Salle, Ill.; College of Physicians and Surgeons, Baltimore, 1895; for many years mayor; a founder of St. Mary's Hospital; died Nov. 16, 1947, aged 80, of heart disease.

Albert L. Nason, Darling, Miss.; Chattanooga (Tenn.) Medical College, 1905; died in the Baptist Memorial Hospital, Memphis, Tenn., recently, aged 77, of cerebral thrombosis.

Clara Mary Ochs, Oak Park, Ill.; University of Illinois College of Medicine, Chicago, 1918; member of the American Medical Association; served on the courtesy staff of the Woman and Children's Hospital in Chicago; died Nov. 19, 1947, aged 71, of carcinoma of the cecum.

David Wilmot Overton, Avon Park, Fla.; University and Bellevue Hospital Medical College, New York, 1899; died recently, aged 80.

Jennie Leigh Kellogg Paris, Hammondsport, N. Y.; University of Buffalo School of Medicine, 1893; died recently, aged 79, of embolism following fracture of femur.

Albert Taylor Parrish, Ovid, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1881; served as health officer; died recently, aged 89, of senility.

John Patterson, Lexington, Ky.; Hospital College of Medicine, Louisville, 1900; died recently, aged 69, of heart disease and Parkinson's disease.

Merton S. Pearce, St. Petersburg, Fla.; University of Maryland School of Medicine, Baltimore, 1900; died in the Suburban Hospital, Bethesda, Md., Nov. 1, 1947, aged 75, of cerebral hemorrhage.

Benjamin Lane Phillips, Paola, Kan.; University of Kansas School of Medicine, Kansas City, 1907; served as county coroner; died recently, aged 66, of congestive heart failure.

William Giles Phipps, Mount Vernon, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1913; served during World War I; affiliated with Mount Vernon Hospital; died Nov. 2, 1947, aged 61, of myocarditis.

William Aloysius Pindar, North Bergen, N. J.; University and Bellevue Hospital Medical College, New York, 1909; for many years police surgeon; served as a member of the state board of medical examiners and city board of health; medical examiner for selective service during World War II; affiliated with St. Mary's Hospital in Hoboken; died Nov. 12, 1947, aged 63, of coronary thrombosis.

Minor Gibson Porter & Baltimore; University of Maryland School of Medicine, Baltimore, 1885; past president of the Baltimore County Medical Society; medical officer of the county draft board during World War I; formerly mayor of Lonaconing; affiliated with the Church Home and Infirmary and Union Memorial Hospital, where he died recently, aged 82, of a fractured right hip as the result of a fall, bronchopneumonia, and diabetes mellitus.

Randolph Reynolds & Wallingford, Conn.; Columbia University College of Physicians and Surgeons, New York, 1914; served during World War I; formerly affiliated with the Meriden State Tuberculosis Sanatorium in Meriden and the Veterans Home Hospital in Rocky Hill; died recently, aged 61, of coronary occlusion.

Donald Ford Robertson, Rahway, N. J.; Washington University School of Medicine, St. Louis, 1929; associate medical director of Merck & Co., Inc.; died in the Harkness Pavilion, Presbyterian Medical Center, New York, Nov. 8, 1947, aged 44, of leukemia.

Charles Edward Rooney & Santa Monica, Calif.; Creighton University School of Medicine, Omaha, 1905; formerly on the faculty of his alma mater; served on the staffs of Santa Monica and St. John's hospitals; at one time practiced in Yuma, Ariz., where he was physician for the Southern Pacific Company and county health officer; died Nov. 1, 1947, aged 66, of hypertensive heart disease.

William Walter Sames, Hartshorne, Okla.; Missouri Medical College, St. Louis, 1896; member of the American Medical Association; formerly affiliated with the Indian Service; died recently, aged 84.

Paul Henry Sandresky & Buffalo; University of Buffalo School of Medicine, 1911; formerly a minister; affiliated with the Lafayette General Hospital and the Millard Fillmore Hospital, where he died Nov. 16, 1947, aged 68, of acute myocardial infarction.

Thomas H. Sandy, Chicago; Harvey Medical College, Chicago, 1901; member of the American Medical Association; physician for the Continental Illinois National Bank and Trust Company for many years; died at his home in Forest Park, Ill., Nov. 24, 1947, aged 72, of coronary occlusion and arteriosclerosis.

Frederick J. Schaufelberger, Los Angeles; Jefferson Medical College of Philadelphia, 1884; died Nov. 20, 1947, aged 97.

Ernest Edward Schriefer, Cannelton, Ind.; University of Louisville (Ky.) Medical Department, 1906; member of the American Medical Association; past president of the Perry County Medical Society; formerly health officer; medical examiner for the county draft board during World War I; affiliated with the Parkview Hospital, Tell City, where he died, Nov. 3, 1947, aged 67, of cerebral hemorrhage.

Erich Wilhelm Schwartz, Washington, D. C.; Rush Medical College, Chicago, 1914; member of the American Medical Association and the Medical and Chirurgical Faculty of Maryland; at one time professor of physiology and pharmacology at the University of Georgia School of Medicine in Augusta and the University and Bellevue Hospital Medical College in New York; died in the Providence Hospital Nov. 11, 1947, aged 56, of coronary thrombosis.

James Wilbur Shankland, St. Louis; St. Louis University School of Medicine, 1904; served during World War I; formerly city hospital commissioner; at one time on the staffs of the Missouri Baptist and St. John's hospitals; died Nov. 7, 1947, aged 80, of heart disease.

Ernst Simmel, Los Angeles; Universität Rostock Medizinische Fakultät, Rostock, Mecklenburg, Germany, 1908; member of the American Psychoanalytic Association; honorary president of the Los Angeles Psychoanalytic Society; died Nov. 11, 1947, aged 65, of heart disease.

Minabel Snow, Brecksville, Ohio; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1899; died recently, aged 82, of pneumonia.

John Howard Snyder, Sunbury, Pa.; Illinois Medical College, Chicago, 1902; medical examiner for the Pennsylvania Railroad; died in Sacred Heart Hospital, Allentown, recently, aged 73, of myocardial infarction.

Dallas Southard & Stamford, Texas; University of Tennessee College of Medicine, Memphis, 1911; served in France during World War I; affiliated with Stamford Sanitarium; died in Pleasant Hill recently, aged 65, of coronary thrombosis.

Erwin Straehley & Cincinnati; Medical College of Ohio, Cincinnati, 1889; affiliated with the Christ and Deaconess hospitals; at one time assistant health officer; for many years member of the board of trustees of the University of Cincinnati; died in Good Samaritan Hospital Nov. 6, 1947, aged 79, of carcinoma of the rectosigmoid.

Joseph Toal & Ridgefield, N. J.; Syracuse University College of Medicine, 1927; affiliated with the Englewood Hospital, where he died recently, aged 56, of coronary thrombosis.

Ansel Harry Tulupan, Chicago; Loyola University School of Medicine, Chicago, 1925; died Nov. 27, 1947, aged 47, of coronary thrombosis.

Arthur Henry Weis, Chicago; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1901; served during World War II; on the staff of the Columbus Memorial Hospital; health editor of the *Abendpost*; died in Mount Sinai Hospital Nov. 10, 1947, aged 74, of virus pneumonia.

William Whitridge Williams & Denver; Johns Hopkins University School of Medicine, Baltimore, 1899; specialist certified by the American Board of Pathology; served as a member of the state board of medical examiners, of which he had been secretary-treasurer; affiliated with the Denver General, City and County and St. Luke's hospitals; died recently, aged 71.

Preston Ezekiel Wolfe, Abingdon, Va.; University of the City of New York Medical Department, New York, 1890; died recently, aged 84, of cerebral anemia and arteriosclerosis.

Robert Henry Wymer & Altoona, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1921; during World War I served in the student army training corps; an examining physician for the Selective Service System during World War II; member of the staff of the Mercy Hospital; died recently, aged 49, of coronary thrombosis.

DIED WHILE IN MILITARY SERVICE

John Charles Gaffney Jr. & Assistant Surgeon, Lieutenant (jg) U. S. Navy, Du Bois, Pa.; Loyola University School of Medicine, Chicago, 1943; began active duty in the U. S. Navy in May 1943, interned at the Naval Hospital in Key West, Fla.; died in a typhoon in the Asiatic area Dec. 18, 1944, aged 28.

John Richard Siddall, Riverton, N. J.; Jefferson Medical College of Philadelphia, 1937; member of the American Medical Association; interned at the Cooper Hospital in Camden; served a residency at the Sloane Hospital for Women in New York; began active duty as a first lieutenant in the medical corps, Army of the United States, in May 1942; promoted to captain; died on Ascension Island May 10, 1945, aged 34, of asphyxia and third degree burns received in a plane crash.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 27, 1947.

Prevention of Meningitis Following Spinal Puncture

The Public Health Laboratory Service and the London Sector Pathologists' Committee has issued a memorandum on the avoidance of the meningitis which results from inoculation into the spinal canal of microbes in the operation of withdrawal of cerebrospinal fluid or in the induction of spinal anesthesia. The organisms most frequently incriminated are *Pseudomonas aeruginosa* and related organisms which can multiply in water at room temperature. Less frequently staphylococci and other skin contaminants are responsible. The sources of contamination are (1) apparatus insufficiently sterilized or contaminated during use; (2) so-called sterile water or saline solution used to rinse the apparatus; (3) hands of the operator or his assistants; (4) skin of the patient, and (5) anesthetic, antibiotic or other solutions.

For prevention the ideal would be to adopt the full antiseptic ritual of a surgical operation. But in many cases time and place render this impossible. The following measures are therefore recommended as practical in nearly all circumstances. If facilities are available, all apparatus, including manometer, should be enclosed within suitable containers and sterilized either by autoclaving at 15 to 20 pounds (6.8 to 9.1 Kg.) pressure for twenty minutes or by dry heat at 160 C. for an hour. The complete outfit can then be held ready for use at any time. If dry heat is used the rubber tubing of the manometer should be sterilized by boiling. For syringes and needles dry heat is preferable but ordinarily necessitates all-glass syringes. If autoclaving or sterilization by dry heat cannot be employed, all apparatus should be sterilized immediately before the operation by boiling for five minutes, preferably in distilled water. A sterilizer with a perforated lift-up tray should be used. At the end of the boiling the tray is removed, placed in the inverted lid, covered with a sterile towel and left to cool. In emergencies a perfectly clean saucepan with a lid can be used. After boiling the water should be drained off and the saucepan left with the lid on until cool. Chemical disinfection, such as soaking in alcohol, should not be used.

The operator should scrub up as for a major operation, or should don dry sterile gloves. If gloves are not available his hands should be dry before he handles any apparatus. This may be accomplished by rinsing with industrial alcohol and/or drying with a sterile towel. Where needle and syringe have to be assembled, the needle should be handled with sterile forceps. From this point onward the operator should touch nothing except the sterile instruments and the skin of the patient. The trochar when withdrawn should be laid on a sterile towel; otherwise it may infect the spinal fluid if introduced again to clear the needle. The skin of the patient should be thoroughly washed with soap and warm water, followed by thorough swabbing with tincture of iodine or 70 to 90 per cent alcohol.

Sir Bernard Spilsbury

Sir Bernard Spilsbury, who for thirty years was the foremost medicolegal pathologist and was employed by the police to investigate the cause of death in all the notorious crimes, was found dying in his laboratory at University College, London. The room was filled with illuminating gas. He had reached the age of 70 and had been in ill health for some time. The coroner's verdict was that he had turned on the gas while his mind was deranged. He retired from his position as government pathologist in 1934 but had continued to work as honorary pathologist and to lecture. His position was unique. Between

the two wars there was hardly a case in which the painstaking collection of evidence was required for the conviction of a murderer in which he was not employed. A striking example was the sensational "Brides in the Bath" case. A man and his newly wedded wife were living in lodgings. In the morning while she was taking a bath he went out, according to his own account, to buy fish. On his return he raised an alarm in the house because, according to his account, he had found his wife collapsed in the bath. She was drowned, and at the inquest his version was accepted and it was supposed that the woman had fainted in the tub and then was drowned. But when a second wife and later a third wife died in the same way, suspicion was aroused and Spilsbury was called in by the police. He came to the conclusion that the women had been murdered by the husband's seizing their feet and suddenly raising them, which would drag their heads under the water. They would be drowned without being able to cry out and alarm the other occupants of the house. To test his hypothesis Spilsbury experimented with a nurse, who, clad in bathing suit, entered a bath full of water. Spilsbury suddenly lifted her feet. She nearly died and had to be revived by artificial respiration. The husband was convicted of murder. No such method of murder was ever known before or since this crime.

Another notorious case was that of "Dr." Crippen. His wife had disappeared, and human remains which could not be identified were found in the cellar of Crippen's house in London. A fraction of a grain of scopolamine hydrobromide was isolated from the remains, and he was convicted of murder.

PALESTINE

(From Our Regular Correspondent)

JERUSALEM, Dec. 15, 1947.

The Rh Factor Among Jewish Communities

In a study on the Rh factor, Gurevitch, Sadowsky, Brzezinski and Polishuk of the Rothschild Hadassah University Hospital found great variations in the incidence of the Rh factor among the different Jewish communities in Jerusalem. Among 1,913 women examined, only 9.6 per cent were Rh negative. Among 12,645 deliveries during a period of eight years only 6 cases of erythroblastosis fetalis were observed. On the basis of these figures the rate of erythroblastosis fetalis among Rh-negative women was 1:210, which compares with a rate of 1:25 to 1:50 reported elsewhere. Of special interest may be the low rate of Rh-negative women found in the Yemenite and Kurdish-Persian communities. Of 44 Yemenite women examined, only 1 was found to be Rh negative, i. e., 2.3 per cent; an even lower rate of 1.5 per cent Rh-negative persons was found among 203 Kurdish-Persian women. These two groups are characterized by their segregated mode of life, intermarriage is rare among them. It is significant that not a single case of erythroblastosis fetalis has been observed among 310 deliveries in Yemenite Jewesses and 1,739 deliveries among Kurdish-Persian Jewesses in the obstetric department of this hospital during the last six years.

In a study of the Rh factor among women suffering from habitual abortion, toxemia of pregnancy, stillbirths and prematurity, the rate of Rh-negative women was similar to that observed in the population at random. In a group of 22 women with obstetric histories suggestive of Rh incompatibility only 3 Rh-negative patients have been found. No case of erythroblastosis fetalis and no signs of isoimmunization in the mothers have been observed in this group.

A detailed study was made in a group of 32 Rh-negative multiparas with obstetric histories of six to fourteen pregnancies. The total of pregnancies in this group was two hundred and seventy-nine. All the husbands except three were homozygous. No case of erythroblastosis fetalis and no signs of isoimmunization in the mothers have occurred in this group.

Allergic Warm Season Conjunctivitis

Conjunctivitis vernalis was the designation given to conjunctivitis appearing periodically in Palestine and reported every year. During the Congress of the Jewish Medical Association in 1944 M. J. Gutmann reported on this disease (*Acta med. orient.* 4:150 [May] 1945), calling it an allergic warm season conjunctivitis, as it appears during the months from February to November, in other words during the warm season, and practically disappears with the beginning of rain. The cause of this conjunctivitis is allergic; usually there is a chronic infection with a secondary fungous allergy. The most common fungi are of the following families: Alternaria, Hormodendrum, Cladosporium, Penicillium, Aspergillus and Monilia. The disease usually attacks young persons. Girls are apparently less susceptible than boys. Forty-five per cent of all patients were from 5 to 15 years of age.

The treatment primarily is aimed at removing the focus of infection and desensitizing the patients with a mixed extract of various molds and bacteria. Within six months—sometimes only after one to two years—two thirds of the patients could be freed of their symptoms. The therapy, however, is not entirely reliable. Gutmann stated that there are still many unsolved problems in connection with allergic warm season conjunctivitis.

In a paper just published (*Acta med. orient.* 6:167 [May] 1947) Gutmann points out that riboflavin given in 5 mg. injections daily proved particularly effective in influencing the inflammation and itching of the eyes. He compares the effect of riboflavin with that of epinephrine in an attack of asthma. The desired effect was reached ten to thirty minutes after the injection of riboflavin and could be maintained for twelve to fourteen hours. The administration of riboflavin in tablet form did not produce relief, but fresh yeast often proved to be successful. Symptoms of riboflavin deficiency could not be found.

TURKEY

(From Our Regular Correspondent)

ANKARA, Dec. 22, 1947.

Aid to Egypt During the Recent Cholera Epidemic

The sudden outbreak of cholera in Egypt during the last week of September 1947 placed Turkey in a difficult position. For the first time in eight years Turkish pilgrims were on their way to Mecca, and many others were in the midst of preparations to procure their passports. Moreover, the eve before "Kurban Bairam" was on a Friday, which naturally made the pilgrimage all the more desirous. Almost 8,000 Mohammedans from Turkey alone had decided to make the pilgrimage this year.

Turkey had not had any cholera for years, and all the anti-cholera vaccine on hand had been sent during the war to China, where it was urgently needed. At the Refik Saydam Institute (Central Institute of Hygiene) the preparation of anticholera vaccine was at once undertaken. The pilgrims and the inhabitants along the coast and at the southern borderline of Syria were vaccinated, and during the first week of October a physician, two trained nurses and four sanitary inspectors, equipped with vaccine for 500,000 persons, left Ankara for Egypt by air. Vaccine sufficient for 200,000 persons was forwarded soon afterward to Syria. The expedition is still working in Egypt in localities indicated by the Egyptian government.

Obviously, with cholera in Egypt, the scourge might easily find its way into Turkey. The Ministry of Health at once organized a cholera prevention board with representatives from the Ministry of National Defense, the Ministry of Communication and the Ministry of the Interior meeting every other day to get first hand information concerning the epidemic in Egypt and the state of health of the Turkish pilgrims. As a precautionary measure the work at the Central Institute of Hygiene proceeded on a twenty-four hour schedule to produce a sufficient quantity of immediately available vaccine. Vaccination teams

were organized to work all through the night, and all personnel on land, sea and air transportation systems, the whole population of the coastline provinces and all tradespeople handling food were immediately vaccinated. Measures were taken to insure the return of the pilgrims by a route other than Egypt and likewise that those returning by air alight only at the Istanbul landing field. Passenger boats were sent from Istanbul and Smyrna to the ports of Cidda Jidda and Beirut with the strictest order to take on no other passengers than Turkish pilgrims arriving there by land. At the Smyrna and Istanbul ports the returning pilgrims were quarantined, vaccinated and searched for carriers. All food that the pilgrims brought with them, even the water from the holy well in Mecca and the dates, was destroyed and special emphasis was given to disinfection of means of transportation, clothing and other possessions of the pilgrims and to the destruction of noxious insects or vermin with DDT. Through articles in the daily papers and radio talks the public was enlightened as to the nature of cholera; films were shown, posters and leaflets were distributed.

Great vigilance was necessary, and drastic measures had to be taken by the Nusaybin and Islahiye health authorities to prevent the scourge from coming in by these southern Syrian gates, for it was reported that pilgrims attempted to cross the border clandestinely in railway trains, automobiles, omnibuses, wagons, on horseback and on foot.

To insure a plentiful supply of anticholera vaccine the Ministry of Health set aside two more laboratories for its production, one in Istanbul and one in Smyrna. This made it possible to meet the Turkish needs and come to the assistance of Egypt, Syria and other countries.

Through the interest people are now taking in regard to matters of health as a result of education and health propaganda, and through the health organization of the Turkish republic, it has been possible to avert this terrible scourge and assist neighboring countries as advocated in the constitution of the World Health Organization of the United Nations.

"Paludrine" and "Quipenyl" Therapy in Malaria

Results concerning the treatment of malaria with the new remedies "paludrine hydrochloride" (chlorguanide hydrochloride) and "quipenyl" at the Ministry of Health's Adana Malaria Institute have been published by Dr. Celal Gokberk, chief of the institute's laboratory. Neither single dose nor daily continual doses of 0.75 or 1 Gm. of "paludrine" for adults have produced toxic effects. Children above 8 years of age were given 0.1 Gm. twice daily; the same dose was also given to a delicate child aged 3 years and to a child aged 12 years with no untoward results. The blood chemical formula in 11 patients revealed no abnormal conditions; after treatment a 9 per cent reticulocytic crisis was found in 1 patient, 7 per cent in another. Urinalysis was normal on admission and on discharge. In 10 ambulant cases of benign tertian malaria (due to *Plasmodium vivax*) a single dose of two to three tablets was given and patients recovered within a month, but after a short interval there were some recurrences and a single tablet then had no effect. In the malignant form of tertian malaria (due to *Plasmodium falciparum*) "paludrine" was not satisfactory; parasites in the blood diminished greatly and a second attack was forestalled, but in from seven to ten days there were recurrences. At the institute hospital in 11 of 12 cases of benign malaria the remedy was effective in preventing a second attack; in the 1 case in which the results were unsatisfactory, a great many parasites were present in the blood. In the morning and evening blood examination of 8 patients the parasites had completely disappeared within three days, in 5 patients within two days. Splenic punctures were performed in 2 cases, revealing the presence of parasites on the fourth day in 1 case, while the other was negative. In 1 case of *vivax* and *falciparum* (mixed) malaria there was a second attack which came to a halt on the third day. In 9 of

13 cases of tertian malaria due to *P. falciparum* second attacks occurred. In 2 of the other 4 cases the parasites in the circulating blood had disappeared on the second day, in 3 on the seventh and in 4 on the fourth day. How far the new remedy is effective evidently depends on the concentration of parasites in the blood. In 1 of 3 patients on whom a splenic puncture was performed the parasites disappeared on the sixth day and in the other 2 on the fourth day. In 2 cases in which a bone marrow puncture was performed, the parasites had disappeared on the fourth day. For examination of the blood the drop and the smear methods were employed, using the original Giemsa solution for staining. During a second attack of malaria tropica the chromatin rings had taken the dye only slightly, and the widening and disappearance of the chromatin granules was observed. The protoplasm had also taken the dye only slightly, and patches devoid of chromatin were visible. The formation of new rings from degenerated adult parasites in benign tertian malaria has not been observed. Blood examination of patients under treatment were made twice and three times during twenty-four hours, and during from three to seven days. In malaria tropica "paludrine" had no effect on schizonts or gametes.

"Quipenyl," a malaria remedy on a "plasmochin" (pamaquine naphthoate) basis, was also given a trial in 2 cases due to *P. vivax*, 2 cases due to *P. falciparum* and 1 case due to mixed tertiana-tropica infection. Three times daily these patients were given a 0.01 Gm. tablet of the drug, resulting in the disappearance of the gametes. Though in the chronic cases the gametes disappeared in the blood stream it was not possible to prevent the formation of new gametes, which were again made to disappear with "quipenyl." In 3 of the 5 cases, gametes disappeared on the third day; in 1 chronic case they disappeared on the fourth day but reappeared on the fifth. This patient was again given "quipenyl," and on the eighth day the blood was completely free from gametes. It was observed that the protoplasm and chromatin granules had taken the dye only slightly and that the remedy had no effect on pigmentation.

BUENOS AIRES

(From Our Regular Correspondent)

Jan. 10, 1948.

The Galli-Mainini Pregnancy Test

At the Congress of Obstetrics and Gynecology of the Rio de la Plata, in Buenos Aires, Dr. Carlos Galli-Mainini communicated further important data on his new test for pregnancy (*THE JOURNAL*, Oct. 11, 1947, p. 374). The basis of the test is the phenomenon of liberation and migration of spermatozoa of the toad, a direct effect of the administration of gonadotropin. The subcutaneous injection of 10 cc. of urine of a pregnant woman into the lymphatic sac provokes, due to its content of chorionic gonadotropin, the liberation of spermatozoa which in the adult toad normally are fixed at the Sertoli cells. The already free spermatozoa pass through the vas deferens and certain renal glomeruli and appear in the urine, where they are then found as described in *THE JOURNAL*, Aug. 2, 1947, page 1196.

The male toad is smaller than the female, its color is darker and more uniform, its skin more rugged, its forearm thicker; it croaks when taken by the sides; it has a dark brown pigmentation on the inner side of the thumb and has the embrace reflex. It is easy to handle and to keep, without alimentation, in a pool for months; it only needs a humid surrounding.

Factors which are important for the reaction include the weight of the toad, which should not be under 100 Gm. The minimum dose is apparently about 40 units of chorionic gonadotropin; a greater quantity is necessary if serum gonadotropin is used. The division into fractions of a dose which is insufficient when given all at once does not increase the capacity of

the reaction. Low temperatures delay the reaction, while darkness apparently is favorable.

The test is positive with chorionic and serum gonadotropin, with hypophysis of the toad, the rat and the rabbit, and also with the bovine follicle-stimulating hormone. It is negative with the urine of normal men and women, children and aged persons; with gynecologic or endocrine disorders; with estrogens, progesterone, testosterone, thyroxin, desoxicorticosterone, beta-hypophamine ("pitressin"), epinephrine, adrenocorticotropin, corticotropin, prolactin; hypophysis of cattle, dog and pig, of *Crotalus terrificus*; with serum and urine of pregnant sheep, cow, mare or hog; with suspension of tissue of liver, kidney, adrenal gland, spleen, heart, gastrointestinal tract, muscles, intermediate lobe of hypophysis; with zinc sulfate, methylene blue, acetylcholine and copper acetate.

The results obtained from 1,354 tests in the first four months of pregnancy were 99.56 per cent correct with not one false positive result. The toxicity of the female urine for the toad is very low (0.95 per cent mortality). Among 281 tests made simultaneously with the Friedman test, 19 results did not coincide. In 2 of them it could not be established if the toad or the rabbit proved correct; in 2 others the rabbit was correct, and in 15 others, the toad. Among 123 women pregnant from six to nine months the percentage of positive results was less. The positivity was better with urine than with serum.

In quantitative investigations it was found that the test was still positive in some cases with as little as 0.125 cc. of urine, while in other cases as much as 4 cc. was necessary. Other quantitative studies showed that the urine lost little of its gonadotropic potency at normal temperature until after ten days.

Of 385 positive tests, 88 per cent could be determined within two hours.

With respect to urine, the test is only positive with urine of pregnant women or with mole (2 cases) or chorionepithelioma (2 cases).

The result is always clearly positive or negative, through the presence or absence of spermatozoa. The technic is simple, without previous preparation of patient or urine. Special microscopic technic is not necessary, and differentiation of the spermatozoa is easy. The test animals are inexpensive, do not need special attention and can be used repeatedly.

In the discussion the eleven communications on this subject confirmed the statements of Dr. Galli-Mainini. They referred to experiences with 150 to 470 tests carried on by each author.

Orthopedic Traction on the Skeleton

Dr. Carlos E. Ottolenghi, associate professor of orthopedic surgery, Faculty of Medicine of Buenos Aires, has completed an investigation for which he has just received the prize which is annually awarded by the Argentine Society of Surgeons. Ottolenghi studied in dogs and rabbits, as well as clinically, the tolerance of the organism for iron wire and traction, particularly the reactions of the tissues, the histopathologic changes, the technic of application and the resistance of different kinds which the wire has to overcome, the direction of the traction powers and the application of wire in children. Infection and exaggerated traction are the most important dangers of traction on the skeleton. He prefers to put the wires in tension according to Kirschner's technic without using the nails of Steinmann.

Brief Items

The first Argentine Congress of Bronchoesophagology was held under the honorary chairmanship of Professor Chevalier L. Jackson of Philadelphia, who gave courses in Buenos Aires and in Córdoba at the invitation of the corresponding Argentine societies. Argentine chairman of the meeting was Dr. Alvaro Bence. The subjects treated were: diagnostic and therapeutic indications of bronchology and esophagology, hospital services of oral endoscopy and oral endoscopy in children.

Correspondence

MEDICAL CONDITIONS IN ALASKA

To the Editor:—The special article on Medical Conditions in Alaska in *THE JOURNAL*, Oct. 25, 1947, page 500, terminated with a number of recommendations to treat, protect and improve the health of the people of Alaska.

Between 1942 and 1946 I was physician-in-charge at the Point Barrow Hospital and was responsible for the health of the people along the Arctic shore. In 1943 the Kotzebue Hospital and the district it covered was also assigned to me. I then traveled between the two hospitals and had the opportunity to visit every Eskimo village in the two districts more than once during layovers and field trips.

The Special Investigating Committee was accurately informed that in most of the native villages at least 25 per cent of the people had active tuberculosis at any one time. The number of active cases in the territory was estimated at a minimum of 4,000. They recommended that a minimum of one thousand beds be made available for the isolation and treatment of patients with tuberculosis. They suggested immunization with BCG vaccine to reduce the incidence of tuberculosis. However, they made no further recommendations for the care and treatment of the remaining 3,000 persons with active cases of the disease.

I had hoped that they would follow up their description of the congestion in the native homes, which they considered one of the main causes for the tremendous incidence of tuberculosis, with a suitable recommendation. I believe that there is a solution to that problem if sufficient interest and attention could be focused on it.

The best in Eskimo culture, in addition to their fine manners, is exemplified by their hand-sewn fur garments and skin clothing and the making of skin-covered boats. Their homes, however, are simple and designed primarily to provide shelter—there is no privacy or convenience. These are permanent structures. The Eskimo is not a nomad. Permanent villages are established at the best hunting and fishing sites. The Eskimo igloo is really a sod house—seldom larger than 10 by 12 by 6 feet (305 by 366 by 183 cm.). There is generally a short, low, entry way used for storage and the shelter of young or weak dogs in the winter. Light is conveyed through a skylight consisting of a wooden frame 2 feet (61 cm.) square, supporting several bowed rods which project outward and on which sewed strips of walrus gut are stretched. There is a small air vent 2 by 6 inches (5 by 15 cm.) leading through the sod roof. The sod house is built around a frame of wooden posts and beams or whale ribs. Heat is furnished by a small oven, fabricated from a discarded oil drum, or a small iron stove. In the villages in which there has been a strong influence exerted by white men, whalers, traders and gold miners, most of the sod houses have been replaced by the more modern wooden frame house. In a country where the temperature during January and February falls to 45 to 50 degrees below zero, and the velocity of the wind may rise to 50 to 60 miles per hour and continue for days, no more preposterous type of home could have been devised. It proves how easily the Eskimo is attracted to white men's ways and how willing he is to accept them.

At Point Barrow, a community of close to six hundred persons, there is only one sod house which is occupied. All other fifty-five houses are wooden frame structures. Except for about six houses which are larger, nearly all measure 10 feet (305 cm.) wide, 13 feet (299 cm.) long and 7 feet (213 cm.) high. The inner and outer walls are 4 inches (10 cm.) apart. In the spring of 1943, with the aid of a native assistant, I had measured every dwelling at Point Barrow and enumerated the number of inhabitants in each. In some there were as many as

fourteen persons. The average was ten persons to a house. The records of this survey are on file at the Point Barrow Hospital. We listed 80 known cases of tuberculosis with active primary and secondary types of infection.

The reason for the congestion was the lack of fuel and food. There was insufficient driftwood; "outside" coal cost \$70 per ton; a week's supply of pitch, secured from oil seepages located at Cape Simpson 60 miles (97 kilometers) to the east, required a dog team of at least seven dogs; a hunter's time and effort for five to seven days, and food for himself and the dogs. These could rarely be spared from the more urgent pursuit of hunting. An inadequate supply of pitch from Cape Simpson and coal from outcroppings at Wainwright 100 miles (161 kilometers) to the west was secured during the summer months, when the ice receded from the shore and permitted the whale boats to motor to Cape Simpson and Wainwright. There was no money for the purchase of "outside" coal except by a few more provident families.

Similar conditions prevailed up and down the Arctic coast. At Wainwright, where outcroppings of coal existed, the wooden frame houses and the sod igloos were slightly larger and were inhabited by fewer persons. But at Point Lay, Point Hope, Kivilina, Shishmaref, Deering, Wales, and Kotzebue, conditions were similar to that of Point Barrow. In these villages, except for Kotzebue, sod igloos predominated.

The pioneers who settled the Western Plain states in the last century lived in large, relatively comfortable sod houses—far better than those the Eskimos occupy today. In the Arctic there are millions of acres of tundra out of which to build large commodious sod houses with privacy and with some conveniences.

The Eskimos of the Arctic have entered into a new phase of cultural relations with the white man. Whereas prior to the war they were isolated, their only contact with the outside world being through the government teachers, missionaries, Army Signal Corps operators, the annual freight boat and the pilot of the occasional mail plane, today they are encompassed by the men and machines of the United States endeavoring to build Alaska into a military base. The hunting economy is rapidly being displaced by easier and more assured methods of earning money and purchasing the needed supplies at the trader's store.

The Eskimo has changed his mode of life but not his dwelling. His manual skill, reliability, self effacing manner and congenial nature have made him a much sought-after employee by the Navy oil contractors at Point Barrow, the Alaska Road Commission, the Army engineers, the U. S. Weather Bureau and the Civil Aeronautic Authority. The Eskimos have the money but lack the know-how.

The basic material is underfoot. The Eskimo has the money to purchase the additional materials and fuel. I believe that a capable architect could devise a model modern Eskimo home which would provide several rooms with thick sod walls, privacy and sanitary conveniences, eliminating congestion and reducing the chance for the dissemination of tuberculosis. If this is done, I believe that the care of large numbers of patients with active tuberculosis who will not secure admission to the projected sanatoriums may then be provided at their homes. An effort to solve the problem of the 3,000 remaining cases of active tuberculosis will then have been made.

EDWARD D. SEINFELD, M.D., Middletown, Conn.

To the Editor:—The special article in *THE JOURNAL* of Oct. 25, 1947, on medical conditions in Alaska contained two statistical items on which further information would be appreciated.

1. The death rate from tuberculosis is quoted as being 359.1 per hundred thousand for 1945-1946. From that figure it is deduced that the total number of cases of open pulmonary

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

Annals of Internal Medicine, Lancaster, Pa.

27:487-682 (Oct.) 1947

- Problem of Neurotic Patient. W. C. Menninger.—p. 487.
 *Streptomycin in Treatment of Meningitis: Report of 27 Cases Treated at Boston City Hospital. T. F. Paine, R. Murray, A. O. Seeler and M. Finland.—p. 494.
 *Pleuropulmonary Tularemia. H. J. Morgan.—p. 519.
 *Nitrogen Mustard as Therapeutic Agent for Hodgkin's Disease, Lymphosarcoma and Leukemia. M. M. Wintrobe, C. M. Huguley Jr., Margaret T. McLennan and L. P. de Carvalho.—p. 529.
 Development of Basophilic Inclusion Bodies in Myeloma Cells After Stilbamidine Treatment. I. Snapper and B. Schneid.—p. 541.
 New Drugs of Value in Treatment of Epilepsy. F. A. Gibbs.—p. 548.
 Insulin Resistance. A. R. Axelrod, S. Lobe, J. M. Orten and G. B. Myers.—p. 555.
 Relative Importance of Dietary Sodium Chloride and Water Intake in Cardiac Edema. L. W. Gorham, E. Lester, A. V. Wolf and H. H. Shultz.—p. 575.
 Prognosis of Syphilitic Aortic Insufficiency. G. G. Reader, B. J. Romeo, B. Webster and W. McDermott.—p. 584.
 Post-Partial Heart Disease. J. P. Melvin Jr.—p. 596.
 Hereditary Polycystic Kidney. J. F. Cannon.—p. 610.

Streptomycin in Meningitis.—According to Paine and associates streptomycin has been used in the treatment of 27 cases of meningitis at the Boston City Hospital. There was 1 death among 16 cases due to *Hemophilus influenzae* and 2 deaths among 8 cases due to other gram-negative bacilli. The deaths occurred in 2 patients in whom treatment with streptomycin was begun late in the disease. The third fatality was associated with the development of a streptomycin resistant strain of *Pseudomonas aeruginosa* during treatment. Two of 3 patients with tuberculous meningitis are living, and their disease appears to be arrested. The results in these and similar cases reported by others seem to justify the following conclusions: 1. Streptomycin is the only agent now available which may arrest the progress of tuberculous meningitis. 2. Streptomycin is the most effective single agent in the treatment of meningitis due to gram-negative bacilli, including *H. influenzae*. The authors note 8 additional cases of meningitis treated with streptomycin since the completion of this report. They include additional cases caused by *H. influenzae*, by *Escherichia coli* communis and *Klebsiella pneumoniae*, also additional cases of tuberculous meningitis. Two of these cases, 1 caused by an organism of the coli group and 1 caused by *K. pneumoniae*, terminated in death.

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Annals of Internal Medicine, Lancaster, Pa.

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- Problem of Neurotic Patient. W. C. Menninger.—p. 487.
 *Streptomycin in Treatment of Meningitis: Report of 27 Cases Treated at Boston City Hospital. T. F. Paine, R. Murray, A. O. Seeler and M. Finland.—p. 494.
 *Pleuropulmonary Tularemia. H. J. Morgan.—p. 519.
 *Nitrogen Mustard as Therapeutic Agent for Hodgkin's Disease, Lymphosarcoma and Leukemia. M. M. Wintrobe, C. M. Huguley Jr., Margaret T. McLennan and L. P. de Carvalho.—p. 529.
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 Electroencephalogram in Porencephaly. J. P. Murphy and J. P. Murphy.—p. 436.
 *Electroencephalogram in Poliomyelitis. B. L. Pacella, C. W. N. Kopeloff and Lenore M. Kopeloff.—p. 447.
 Effect of Crossing Nerves to Antagonistic Limb Muscles. R. W. Sperry.—p. 452.
 Innervation of Choroid Plexus. Maria Tsuker.—p. 474.
 Clinicopathologic Aspects of Parkinsonian States: Review of 100 Cases. J. W. Heath.—p. 484.

Electroencephalogram in Poliomyelitis.—Pacella and associates studied electrophysiologic alterations of the brain during the course of poliomyelitis. Definite or electroencephalographic changes which might indicate electrocortical activity were not observed prior to the onset of fever or paralysis in monkeys given intracerebral injections of simian poliomyelitis virus. Abnormalities of the electroencephalogram appeared during the paralytic stage and became more conspicuous with the progression of the disease. The electroencephalographic changes consisted chiefly of a progressive increase of slow activity, disappearance of fast activity, a relative increase in the amount of fast activity.

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Estrogens and Orchiectomy in Prostatic Cancer.—Wattenberg cites investigations which show that repeated injections of estrogens over long periods cause a condition of generalized hyperossification, which fits in with the roentgenologic observations and microscopic sections of skeletal metastases due to cancer of the prostate gland, before and after treatment with diethylstilbestrol and bilateral orchiectomy. The author shows in roentgen ray films and high power and low power views of bone tissue that estrogens can inhibit metastatic carcinoma not only by changing the carcinomatous cells but also by hyperossification about the regressed tumor cells. Views of carcinomatous prostatic tissue before and after treatment with diethylstilbestrol demonstrate that diethylstilbestrol and bilateral orchiectomy can cause a regression of the metastatic carcinoma of the prostate and a regression of the primary carcinoma of the prostate.

Laryngoscope, St. Louis

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Treatment of External Otitis: III. Use of Vehicles and Antibiotics in External Auditory Canal in Vitro Studies. B. H. Senturia and J. A. Doubly.—p. 633.

Use of Antibiotics in Treatment of Bacterial Infections. W. B. Wood Jr.—p. 657.

Changing Concepts of Sinusitis. F. J. Putney.—p. 664.

Plasmocytoma: Report of Case. J. B. Costen.—p. 671.

Changing Concepts of Sinusitis.—According to Putney surgical treatment of sinusitis has largely been replaced by medical management. The emphasis is on restoration rather than removal or destruction of diseased tissue. The sulfonamide drugs and the antibiotics have changed the treatment of sinusitis. In longstanding suppurative sinusitis the membrane becomes fibrotic and little benefit results from use of the sulfonamide compounds or penicillin. Sinusitis is classified as allergic, mechanical or bacterial. Allergic cases require primary attention to the allergic diathesis; those due to mechanical blockage are relieved by simple surgical procedures, and early bacterial sinusitis responds to penicillin. Penicillin is equally valuable in treating the complications of orbital cellulitis and osteomyelitis of the skull. Surgery can often be avoided when penicillin is given early, but in chronic osteomyelitis surgical drainage is usually needed in addition to the drug.

New England Journal of Medicine, Boston

237:651-682 (Oct. 30) 1947

*Diagnostic and Therapeutic Value of Liver Biopsies with Particular Reference to Trocar Biopsy. W. Volwiler and C. M. Jones.—p. 651.

*Renal Damage Following Intravascular Hemolysis. E. L. Burwell, T. D. Kinney and C. A. Finch.—p. 657.

Granuloma Inguinale with Perianal Involvement: Report of Case. J. Berkowitz.—p. 665.

"Folic Acid" Pteroylglutamic Acid and Related Substances. F. Sargent II.—p. 667.

Hepatitis, with Invasion of Cystic Duct and Metastasis to Third Lumbar Vertebra.—p. 673.

Meningioma of Spinal Cord.—p. 676.

Trocar Biopsy of Liver.—Volwiler and Jones state that needle or trocar biopsy of the liver has advantages over other methods. When properly performed, it causes little discomfort and, if a fairly uniform pathologic process is present, provides a satisfactory sampling of tissue from deep within the hepatic substance. They have performed 234 needle biopsies with 0.5 per cent mortality. Of the total number, 216 provided sufficient tissue for adequate histologic appraisal; in 79 cases the biopsy was essential to an accurate clinical diagnosis. Aspiration liver biopsy will furnish the following practical information: correct differentiation of extrahepatic and intrahepatic biliary obstruc-

tion when clinical and laboratory data are inconclusive; exact diagnosis of the type of diffuse intrahepatic disease; determination of the particular phase of a known subacute or chronic hepatitis; indications for therapy not obtainable from clinical and laboratory examinations, and accurate evaluation of therapeutic regimens in certain types of chronic hepatic disease. Needle aspiration liver biopsy, has proved a useful and safe measure for making exact diagnoses and for studying the abnormal physiology of disease of the liver.

Renal Damage Following Intravascular Hemolysis.—The observations reported by Burwell and his associates are concerned with the medical management of the anuric patient and with the functional and anatomic reversibility of the renal lesion produced. A housewife aged 29, who had had an abortion during the week prior to admission, recovered from the anuria that followed massive hemorrhage but succumbed three months later to homologous serum hepatitis. During the intervening period the renal function showed steady improvement, as evidenced by clinical and laboratory tests. Necropsy offered a unique opportunity to correlate the residual anatomic lesions with the clinical picture. The fact that the renal function tests improved until the time of death suggests eventual complete recovery. Necropsy showed little residual damage to the kidney.

New Jersey Medical Society Journal, Trenton

44:439-477 (Nov.) 1947

*Combined Antigens in Treatment of Rheumatoid Arthritis. P. J. Warter, D. A. Donio and S. Horoschak.—p. 441.

*Pruritus Ani: Biochemophysiologic Entity. H. E. Bacon and C. E. Hardwick.—p. 446.

Benign Paroxysmal Peritonitis: Report of 2 Cases. T. S. Heineken.—p. 451.

Role of Private Practitioner in Venereal Disease Case Finding. W. A. Brumfield.—p. 453.

Control of Epidemic Diarrhea by Decentralization of Infants. I. J. Wolf.—p. 456.

Unstable Colon. S. B. Kaplan.—p. 458.

Treatment of Rheumatoid Arthritis.—Warter and his associates emphasize that the treatment of rheumatoid arthritis should be directed against the etiologic factors rather than the affected joints. Mental and physical rest; maintenance of adequate nutrition, control of pain and eradication of obvious foci of infection are essential to the successful treatment of rheumatoid arthritis. On the premise that foci of infection, streptococci, and their toxins or toxic products play some role in the causation of rheumatoid arthritis, the authors decided to incorporate into their therapeutic regimen the use of streptococcus-staphylococcus-vaccine-toxin toxoid combined antigen. Clinical results with this combined antigen have been as favorable as, and in a number of patients more favorable than those obtained with gold therapy. If the action of gold therapy is to alter the biologic activity of tissue sensitized to infection, then the combined antigen is much safer. The antigen proved effective in arresting and controlling rheumatoid arthritis in 71.1 per cent of the 90 patients observed from two to four years.

Pruritus Ani.—Bacon and Hardwick suggest that pruritus ani may be due to a disturbance in the acid-base balance which resulted in a change occurring in the bacterial flora, this in turn raising the pH of the rectal mucosa. This alkaline reaction has been constantly present in the majority of the cases of pruritus studied by the authors. It is their opinion, based on previous histopathologic determinations, that pruritus ani is a form of chemical dermatitis varying in its skin changes. They have been using since 1946 a medical routine aimed at reducing the pH of the rectal mucosa. This includes an acid-ash diet and glutasin capsules (a form of glutamic acid hydrochloride in combination with pepsin). Gelatin suppositories which contain beta-lactose are used. The diet reduces the pH and the glutasin, which acts as hydrochloric acid when administered orally, aids in this process. The lactose suppositories tend to prevent the seepage of rectal discharges of a high pH during the night. Following evacuations they advise the use of cotton pledgets, using a boric saturated solution to remove secretions. The area is kept thoroughly dry with boric powder. Improvement is evident following the judicious use of this regimen. The authors tabulate observations made on 125 cases of pruritus ani.

New York State Journal of Medicine, New York

47:2239-2366 (Nov. 1) 1947

- Effect of Anesthesia and Surgery on Patients with Pulmonary Tuberculosis. W. M. Parke Jr., E. R. Loftus and H. F. Bishop.—p. 2285.
Difficulties in Diagnosis and Treatment of Lesions of Pyloric Antrum. H. L. Segal, J. S. Watson Jr. and T. B. Steinhause.—p. 2292.
Anal Incontinence. S. T. Ross.—p. 2299.
Complications Peculiar to Ulcerative Diseases of Colon. N. D. Smith.—p. 2304.
Carbon Tetrachloride Poisoning: Report of 7 Cases with 2 Deaths. I. Gray.—p. 2311.
Evaluation of Penicillin in Topical Therapy. J. L. Miller, J. J. Rodriguez and A. N. Domonkos.—p. 2316.
Ragweed Dermatitis (Oral Desensitization). B. J. Slater, J. L. Norris and N. Francis.—p. 2322.

Surgery, Gynecology and Obstetrics, Chicago

85:547-674 (Nov.) 1947

- Applied Anatomy of Femoral Vein and its Tributaries. E. A. Edwards and J. D. Robuck Jr.—p. 547.
Lymph from Liver and Thoracic Duct: Experimental Study. J. C. Cain, J. H. Grindlay, J. L. Bollman and others.—p. 559.
*Gelatin Nephrosis: Renal Tissue Changes in Man Resulting from Intravenous Administration of Gelatin. O. K. Skinsnes.—p. 563.
Sodium Pentothal Anesthesia for Selected Vaginal Obstetrics. A. L. Dippel, R. J. Helman, C. E. Wolters and others.—p. 572.
*Andrologic Endocrinology: Correlation of Clinical Symptoms, Urinary Hormone Excretion and Testicular Cytology. J. W. Goldzieher and E. C. Hamblen.—p. 583.
Comparative Study of Thromboangiitis Obliterans in White and Negro Patients. H. A. Davis and L. D. King.—p. 597.
Report on Use of Harris Tube. R. E. Herrera, J. B. Millet and G. H. Lawrence.—p. 604.
*Diverticula of Duodenum and Jejunum with Report of New Technical Procedure to Facilitate Their Removal and Discussion of Their Surgical Significance. H. Mahorner and W. Kisner.—p. 607.
Carcinoma of Larynx: Methods and Results of Treatment. G. B. New, F. A. Figi, F. Z. Havens and J. B. Erich.—p. 623.
Monteggia Fractures: Analysis of 25 Consecutive Fresh Injuries. F. M. Smith.—p. 630.
Neurilemmoma of Pharynx. C. E. Koop, H. E. Jordan and R. C. Horn.—p. 641.
Comparative Hematologic Findings in Normal, Splenectomized and Spleen-Transplanted Dogs. A. L. Copley, P. L. Stefkó and Janet Naylor.—p. 646.

Gelatin Nephrosis.—Skinsnes reports on postmortem examinations of 23 patients who received gelatin intravenously in quantities ranging from 100 to 17,600 cc. with widely varying intervals between the final injection and the death of the patient. The gelatin, derived from pig skin, was given in an 8 per cent solution in isotonic sodium chloride solution, usually in doses of 800 cc. The patients died as a result of medical and neoplastic disease or from complications of therapeutic surgical measures. The renal lesion produced by gelatin is compared with that of sucrose nephrosis. Gelatin nephrosis is a reversible change occurring within half an hour after its intravenous administration and disappearing within one hundred and twenty hours following the last injection. Studies of the effect of the renal lesion on renal function are inconclusive. In 1 patient diuresis developed and in another oliguria following intravenous administration of gelatin. Caution is suggested in patients with previous renal impairment. Three cases are reported which suggest gelatin as a potential precipitating factor in coronary occlusion and vascular thrombosis in the presence of circulatory disturbances and vascular disease.

Urinary Hormone Excretion and Testicular Cytology.—Goldzieher and Hamblen report 8 patients selected to illustrate discrepancies between clinical evidence of androgenic activity, urinary hormone excretion and testicular histology. Increased numbers of Leydig cells were associated with low or high 17 ketosteroid excretion, or with normal or high gonadotropin excretion. Decreased numbers of Leydig cells were associated with very low, low, normal or high 17 ketosteroid excretion and with low or high gonadotropin excretion. The authors confirm the observation of Heller and Nelson that there is no quantitative correlation between elevation of gonadotropic excretion and 17 ketosteroid output. Clinical evidence of hypoadrogenism was observed in the presence of low or high 17 ketosteroid excretion. Eunuchoid habitus was present with high, normal or low gonadotropin excretion or with increased or decreased numbers of Leydig cells. A large penis was noted with low, normal or high 17 ketosteroids and a small penis with high normal 17 ketosteroids. Evidence of feminization was

observed with high normal 17 ketosteroids and increased numbers of Leydig cells with low normal 17 ketosteroids and with low 17 ketosteroids and few Leydig cells. Gynecomastia was observed in the presence of increased or greatly decreased numbers of Leydig cells, and yet with normal sized penis. It was seen with normal or low gonadotropin excretion or with normal or low 17 ketosteroid excretion. Hypertrophy or hyperplasia of Leydig cells cannot be regarded as indicative of increased or even of normal secretory activity. It is possible that studies of mitochondria and Golgi apparatus, as well as the use of perfected histochemical technics, may provide adequate cytologic criteria of endocrine cellular activity.

Intestinal Diverticula: Surgical Removal.—Mahorner and Kisner state that duodenal and jejunal diverticula occur in from 1 to 2 per cent of patients who have roentgenographic studies made for gastrointestinal symptoms. The prevailing opinion was that they are relatively innocuous, but they frequently are responsible for disabling symptoms. Medical measures such as a bland diet and recumbency on one side after each meal are acceptable only for patients whose physical condition precludes operative treatment. Surgery is indicated if the symptoms are sufficiently severe. When duodenal diverticula are large enough to cause residual pooling of barium, removal or inversion is indicated. Jejunal diverticula are much less common than diverticula of the duodenum and are much more difficult to diagnose preoperatively. They may cause severe symptoms. Their surgical removal results in cure. The authors describe a new technic of pumping up the duodenum with air to show diverticula which may be hidden, particularly those protruding into the head of the pancreas or into the retro-duodenal area. This new procedure should insure their discovery at the operating table and thus facilitate their removal. A group of 6 cases are reported, in each of which operative intervention was performed and the patient was relieved of his symptoms.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

55:573-624 (Nov.) 1947

- *Indications for Thyroidectomy for Hyperthyroidism. G. Crile Jr.—p. 573.
Some Observations on Exophthalmos. F. F. Rundle.—p. 578.
Maternal and Infant Mortality: Comparative Study Covering Period of Twenty Years, Based on Records of Hospital of Good Samaritan at Los Angeles, California. R. H. Fagan.—p. 584.
Preservation of Threatened Pregnancy with Particular Reference to Use of Diethylstilbestrol. G. Rosenblum and E. Melinkoff.—p. 597.
Lipoma of Ileum Causing Ileo-Ileal Intussusception in an Adult. L. B. Sherry.—p. 604.
Case of Thrombophlebitis and Allergy. A. J. Lesser.—p. 607.
Esophageal Duplications of Mediastinal Cysts of Enteric Origin. J. C. Jones.—p. 610.
New Infant Tracheotomy Tube. W. F. Goff.—p. 618.

Hyperthyroidism.—According to Crile, thiouracil proved to be an effective means of preparing patients with severe hyperthyroidism for thyroidectomy, but its toxicity was too high to render it acceptable for general use as a definitive treatment. Propylthiouracil is relatively safe, and, although not so effective as thiouracil, it still affords an excellent means of controlling hyperthyroidism without undue danger of side effects. The author used propylthiouracil in 218 patients. The dosage used, 200 to 300 mg. daily, is not always sufficient to maintain a remission. Judging from the prompt recurrences which have taken place in patients who have of their own accord discontinued treatment after a few months of control, incidence of remissions will not be as high as had been anticipated. If the patient is cooperative and can be observed by a physician who is familiar with the structure of the thyroid and the pharmacologic action of the antithyroid drugs, treatment can be extended over long periods. When the patient is uncooperative or cannot be observed periodically, it is preferable to perform a thyroidectomy. Patients with small or moderate sized diffuse goiters with mild or moderate hyperthyroidism, patients with recurrent hyperthyroidism and patients whose life expectancy is short, regardless of the type of goiter, may safely be given a trial on medical management for a year or more. If they respond favorably and prefer medical treatment, this may be continued indefinitely. If they respond poorly or desire surgery, a subtotal thyroidectomy should be performed.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EDEMA OF FEET DURING BUS TRIPS

To the Editor:—A woman patient develops edema of the feet and ankles during prolonged bus trips. The swelling is much less on train rides of two days' duration. She has a slight systolic murmur and a fibroid of the uterus of the size of a baseball, no other pathology. Would you give the reason for this edema?

M.D., Ohio.

ANSWER.—The majority of ambulatory patients with edema of the ankles do not have any cardiac disease. A listing of other causes, most of which concern difficulty in the local circulation in the legs dependent on poor veins, overweight and inactivity, can be found in an article by Foote and associates (The Clinical Significance of Bilateral Edema of the Lower Extremities, *Am. J. M. Sc.* 199:512, 1940). From the data given here it seems unlikely that heart disease is responsible in the case cited. If the heart has not been enlarged and there has been no important dyspnea, the edema is to be ascribed to other cause than cardiac. From the statement that there is "no other pathology" it is unlikely that kidney disease, hypoproteinemia or myxedema plays any role either. There is evidently no other generalized disease process that can be easily identified. To sit or stand for a long time in bus or train would favor edema in a person with faulty leg veins; the longer the trip the greater the amount of such edema.

INJURY TO THE SKIN AND EPITHELIOMA

To the Editor:—A male patient, 35, came into my office May 27, 1947, with a quarter-sized well defined lesion, elevated, infiltrated and erythematous. The center of this area was occupied by a pea-sized verrucous growth. A biopsy of material taken from the edge of the lesion revealed a beginning prickle cell epithelioma, confirmed by a second biopsy. The patient states that on or about April 10, 1947 he was struck by a chip of hot steel while working. He reported to his first-aid station immediately, and a dressing was applied. The area not only failed to heal but continued to increase in size. Several physicians were consulted and several cauterizations were performed, but the lesion continued to increase in size. The question that I would like to pose concerns the time relationship between the trauma and the epithelioma. The patient saw me six weeks after trauma, and the biopsy report of prickle cell epithelioma was present. Can trauma cause an epithelioma in such a short period of time?

M.D., Connecticut.

ANSWER.—Theoretically a causal relation between the trauma and the cancer in this case cannot be excluded. Neither can one exclude a potential or preexisting cancer at the site of the trauma. When one considers the frequency of injuries to the skin in daily life without development of cancer, it becomes difficult to accept a causal relationship. Assuming the existence of a causal relation, the writer is unaware of any clinical evidence to indicate the time necessary for the development of cancer following trauma in man.

ASPHYXIA OF THE NEWBORN

To the Editor:—Please discuss asphyxia of the newborn. Recently I have had the anesthetist give oxygen as the head or breech is being delivered and continue the oxygen until the baby is pink. The cord is not tied until pulsations cease, unless there is evidence of hemorrhage. Is it good practice to administer oxygen to the mother for two minutes before the baby is delivered by cesarean section? If the infant can be delivered without cyanosis, isn't it much better than tying the cord immediately and pumping mucus or other secretions into the lungs while administering oxygen. The secretions are supposed to be removed, but this is not always accomplished. W. R. Moore, M.D., Florence, Ala.

ANSWER.—There is good experimental evidence that the establishment of extrauterine respiration is not the cataclysmic event that it has been pictured. Respiratory movements begin early in pregnancy and continue throughout intrauterine life. They are shallow and occur at irregular intervals but are sufficiently strong to move amniotic fluid in and out of the lungs. Any factor which decreases fetal oxygenation will decrease the frequency of these respiratory movements or stop them altogether for a period of time. Analgesic and anesthetic agents likewise depress intrauterine respiratory activity for varying periods, depending on the drug used. At delivery, oxygenation through the placental circulation stops but the respiratory movements

fill the lungs with air and the extrauterine respiratory pattern develops. Any depression of the intrauterine respiratory movements interferes with the transition to normal vigorous breathing and results in asphyxia.

Asphyxia of the newborn is thus the result of anoxia during the latter part of labor or during delivery. This may be the result of depression of intrauterine respiratory movements by sedative drugs and anesthetic agents or the result of any condition which interferes with placental circulation, such as cord entanglements, partial placental separation, prolonged labor or difficult operative interventions. Increased oxygenation artificially supplied during the latter part of labor and delivery should decrease anoxia, thereby improving the transition from intrauterine to extrauterine respiration.

ALBUMINURIA AND PREGNANCY

To the Editor:—A woman aged 23 was found in a routine examination to have consistently a 2 to 4 plus albuminuria with a few casts and a specific gravity over 1.020 and at times 1.028. The blood count is normal, the blood pressure 100/70. She is asymptomatic. Intravenous pyelograms reveal a good concentration of the dye. Concentration and emptying of the pelvis are equal. The right pelvis is slightly larger than the left. There is a slight ptosis of the right kidney, with a sharp bend in the ureter a third of the distance from the pelvis to the bladder. She had scarlet fever at the age of 5. Several years ago she was kept in bed for "one summer" by a physician, the reason being unknown. She has one child aged 2½ years. During that pregnancy she was "quite sick" during the early months and "felt fine" during the last two months except for swelling of the feet and legs. Labor at term was spontaneous. Her physical condition is satisfactory except for the kidney condition. Should she become pregnant again? If so would there be any reason for early induction of labor or cesarean section to prevent damage to the kidneys? She is anxious to have more children. What is the consensus concerning the induction of labor during the last trimester because of toxemia of pregnancy? Is the induction of labor preferable to cesarean section? What would be the advised method to induce labor in these cases? Is induction of labor or cesarean section preferred in a normal pregnancy with slightly diminished measurements? What statistics afford one procedure the choice above the other?

M.D., Kentucky.

ANSWER.—From the information presented it cannot be established that this patient suffers from actual nephritic damage. An orthostatic albuminuria can well account for the variable proteinuria. Orthostatic albuminuria is particularly suspect because of the demonstrated ptosis of the right kidney and slight hydronephrotic dilatation of the right renal pelvis. Certainly comparison of early morning urine (secreted when the patient is recumbent) with that secreted when the patient is erect and/or active is indicated. In orthostatic albuminuria, urine secreted with the patient recumbent will be free or nearly free of protein; urine secreted during activity, especially walking, may be heavily albuminous. Knowledge as to the quantity of protein lost each day is also desirable in estimating nutritional requirements. If such a test should reveal great variation in protein loss correlated to posture and activity, it might be most worth while to obtain separate specimens of urine from each side by ureteral catheterization after a strenuous walk to determine whether the protein is coming from both kidneys or only from the right.

An orthostatic albuminuria is not a contraindication to additional pregnancies. The patient's vulnerability to hypertension can be determined by application of the cold pressor test, first described by Hines and Brown and applied to analysis of the renal vascular problems of obstetrics by Dieckmann and Michel (Dieckmann, W. J., and Michel, H. L.: *Arch. Int. Med.* 55:420 [March] 1935. Hines, E. A., Jr., and Brown, G. E.: *Proc. Staff Meet., Mayo Clin.* 7:332 [June 8] 1932; Hines, E. A., Jr.: *Am. Heart J.* 19:408 [April] 1940).

It is impossible to predict the desirability of early induction of labor in future pregnancies. Frequent antepartum observation should be an adequate guide. The appearance of hypertension during pregnancy is a more significant warning than albuminuria; preexistent nephritis exacerbated by pregnancy is a progressive disorder with a relatively poor prognosis and considerably increased fetal mortality if permitted to continue to full term. Abruptio placentae is a common complication. Hypertension is the most useful criterion of hazardous intoxication. Anemia is also of the greatest importance; future antepartum care should include frequent observations of the blood count and liberal nutritional supplementation to keep the hemoglobin content near optimal levels.

The choice between induction of labor and cesarean section depends largely on factors not stated in the query: pelvic measurements, ease of delivery of the first child and the like. In most instances of nephritis and/or hypertension complicating late pregnancy, conservative medical induction with castor oil and quinine and/or rupture of the bag of waters usually suffice. Cesarean section is indicated in primiparous patients who fail

to respond to conservative measures and who have a long, hard and undilated cervix, a viable baby and intact membranes. Pituitary injection, if administered at all, must be given cautiously because of the hazard of inducing a sharp rise in arterial tension. When any cephalopelvic disproportion exists, the administration of pituitary injection before delivery of the infant is contraindicated. For further discussion of the purely obstetric aspects of the problem, any of the standard textbooks on obstetrics should be consulted.

EFFECT OF "BENADRYL" ON PREGNANCY

To the Editor:—Is there any contraindication to the use of "pyribenzamine hydrochloride" (tripelennamine hydrochloride) or "benadryl hydrochloride" (diphenhydramine hydrochloride) during pregnancy? I have a patient who is severely affected during the ragweed season. During her pregnancy last summer she took both "benadryl" and "pyribenzamine" regularly. In the seventeenth week of her pregnancy she aborted, passing the placenta but no grossly recognizable fetus. Her uterus at the time was enlarged only to half its expected size at that period. She is pregnant again and is beginning to have severe vasomotor rhinitis and asthmatic attacks. Can she take either "benadryl" or "pyribenzamine" for the relief of these symptoms without endangering her pregnancy? I would appreciate an early reply, due to the urgency of the case.

M.D., New York.

ANSWER.—Both of these drugs have been used extensively during the past year and thus far reports do not indicate that they may produce abortion. In a patient who may have drug sensitization, drug sickness may ensue which, it could be assumed, might of itself have some undesirable effect in pregnancy. This is true of any illness during the antepartum period. In the present instance it is probable that the patient is not in this category, since it was administered during the previous pregnancy.

POSSIBLE CONGENITAL DIVERTICULUM OF THE BLADDER

To the Editor:—I have under my care a boy 3½ years of age, who passed bloody urine on one occasion about two years ago, but since has had no further urinary symptoms. A presumably congenital diverticulum of the bladder was demonstrated by urogram. He now complains occasionally of mild pain below the navel. Since no other explanation can be found, it is thought that the pain might be caused by the diverticulum. Do you feel that, in the absence of symptoms, surgery is advisable? At what age should this surgery be undertaken, if at all?

M.D., California.

ANSWER.—One may not presume that a diverticulum of the bladder is congenital. Cystoscopic observation is imperative in the given case. An obstructive lesion at the bladder neck may have caused the diverticulum and may now be causing irreparable pathologic change of the upper part of the urinary tract in addition to the pain below the navel. Among the obstructive lesions in a child aged 3½ years one may mention: contracture of the vesical neck; bands, folds or valves of the posterior urethra; hypertrophy of the verumontanum; meatal stricture; preputial stricture, and anterior urethral stricture.

To complete the examination retrograde pyelograms should be made and differential renal function should be ascertained to establish the integrity of the upper part of the urinary tract.

If an obstructing lesion is found it should be corrected regardless of age. Subsequently, the diverticulum may not need surgical correction.

THE SEDIMENTATION RATE DURING PREGNANCY

To the Editor:—Is blood drawn from the vein as accurate for use in taking a blood count as the usual prick of the finger? How much does the normal sedimentation rate rise during pregnancy, and when must pregnancy be taken into consideration when evaluating the moderately rapid sedimentation rate due to other causes such as rheumatic fever?

M.D., New Jersey.

ANSWER.—Blood drawn from the vein and introduced into a proper anticoagulant is an accurate and reliable source for the determination of the red count, white count, hematocrit, platelet count and certain other observations. It is more reliable than samples obtained by capillary puncture. The anticoagulant of choice is dry oxalate mixture, which is made as follows: Three grams of crystalline ammonium oxalate and 2 Gm. of crystalline potassium oxalate are dissolved in distilled water with the aid of heat and made to a final volume of 100 cc. This gives a final concentration of 5 Gm. per hundred cubic centimeters of mixed oxalates. The concentration used in blood is 200 mg. of oxalate mixture per hundred cubic centimeters of whole blood. The standard amount of blood taken for hematologic observations is 5 cc. For convenience, the following procedure is used:

A stock of bottles or tubes is prepared in advance to receive 5 cc. samples of blood by pipetting into each receptacle 0.2 cc. of the solution of oxalate mixture and drying the anticoagulant in the room, in a desiccator or in an oven, using a temperature of less than 180 C. When dry, stoppers are added. Receptacles containing dry oxalate mixture can be stored indefinitely without deterioration.

WARNING: Dry oxalate mixture cannot be used for any chemical test in which nitrogen determinations are made, since it contains ammonia.

The sedimentation rate of red blood cells increases during the last trimester of pregnancy in a gradual and progressive manner, reaching a maximum immediately after delivery. It then decreases to normal, but this may require a period of several weeks. This is related to an increase in the concentration of plasma fibrinogen during the latter portion of pregnancy and the puerperium. Therefore, a moderate elevation of sedimentation rate occurring during the last half of pregnancy must be considered as possibly related to the pregnancy itself. For both the question concerning the anticoagulant and that concerning the sedimentation rate, reference is made to Wintrobe, M. M.: Clinical Hematology, edition 2, Philadelphia, Lea & Febiger, 1946.

DAMAGE TO SIGHT AND HEARING FROM ELECTRIC SHOCK

To the Editor:—A man aged 23 came in with unilateral deafness and poor vision (20/200) in the eye on the same side as the deafness. His history was "being struck by a wire carrying 275 volts direct current over that ear alongside the head." Two men had been killed previously by the same type of accident. Examination revealed total deafness in the left ear but no perforation of the tympanic membrane. Eye examination revealed no fundus lesion and vision could not be improved. The patient's past history was that he has been discharged from the navy with normal vision. This accident put him in the hospital for nine days. Could an electric shock such as this cause an injury to produce deafness and blindness? M.D., West Virginia.

ANSWER.—An electric shock of 275 volts, with sufficient amperage, could cause such a condition. The fact that two men had been killed by such a shock is evidence that the amperage was high. Damage is often on both sides with diffusion of the electric shock, but a local shock, leaving no severe skin burn, can cause severe damage to deeper structures. If the caloric labyrinth tests produce no nystagmus there is presumptive evidence of eighth nerve damage. Severe optic nerve damage can occur from electric shock. Such cases later show the picture of optic atrophy.

SUBACUTE NEPHRITIS

To the Editor:—A man, 29, in good general physical condition, has had subacute nephritis for the last six months. The onset presumably followed a streptococcal tonsillitis. Some improvement followed the usual dietary measures and a course of penicillin, 150,000 units, over a period of seven days. He still has albumin (3 plus), with red and white blood cells and some renal epithelia in his urine. His blood pressure has varied within fairly normal limits, and there has been transient moderate increase in nitrogen urea, uric acid and creatinin. Eye grounds have been essentially normal. The tonsillar stumps are buried and there is moderate adenopathy in cervical lymph nodes. Although several cultures have been made from specimens of catheterized urine on only one occasion has a streptococcus been recovered. The question of complete surgical removal of the tonsillar stumps arises, and I would appreciate an opinion as to its advisability. Would the risk of causing the renal disease to flare up be diminished by a preoperative course of penicillin?

Rudolph V. Gorsch, M.D., New York.

ANSWER.—The advisability of immediate complete removal of the infected tonsillar stumps cannot be dogmatically affirmed or denied. Certainly it would be desirable to remove these foci of infection which may be constantly reinfecting the kidneys, but there is hazard in the probability of a bacteremia induced by trauma to the infected throat. It would appear more desirable to attempt first more intense antibiotic therapy with penicillin, 40,000 units every three hours for five or six days. After this, urinary, throat and blood cultures as well as estimation of the renal functional capacity should be carried out. If tonsillectomy is to be performed at a later date, both preoperative and postoperative administration of penicillin is desirable.

Unfortunately, no mention is made of any examination of the blood, either by culture or routine hematologic methods. Anemia is an almost universal consequence of acute nephritis, and its continuance plays an important role in the perpetuation of the disorder. Injured structures can hardly be expected to repair themselves effectively unless they are obtaining a nearly optimum blood supply. If anemia coexists, as it most probably does, it should be energetically combated, even to the administration of whole blood by transfusion.

IN VIVO AND IN VITRO STREPTOMYCIN RESISTANCE OF TUBERCLE BACILLI

To the Editor:—In many institutions where streptomycin is used for tuberculosis the value of continued treatment is judged by culture resistance of the involved organism. Has any work been done which indicated that resistance in vivo is definitely a corollary of any resistance which may be found in vitro? Lester Leonard, M.D., Miami Beach, Fla.

ANSWER.—The exact relation between the in vivo and in vitro resistance of tubercle bacilli to streptomycin in man is not apparent as yet. However, the resistance developed to streptomycin by tubercle bacilli from 8 of 12 patients ranged from five hundred to a thousand times as great as that of cultures taken before treatment (Youmans and associates). This resistance is retained even after residence in guinea pigs for ten weeks or more and may subsequently be maintained on glycerinated egg yolk agar for many weeks (Karlson, Feldman and Hinshaw). Even in vitro there is a wide variation in the rate of resistance development, ranging from twofold to a thousandfold (Williston and Youmans). It was noted recently that "the clinical significance of the resistance to streptomycin developed by tubercle bacilli is not definitely established" (Youmans and Karlson) after a study of 131 strains prior to treatment (90 per cent being inhibited in concentrations of less than 2 micrograms per cubic centimeter medium); a small number of strains were isolated and tested following treatment with streptomycin, some attaining a resistance of about 2,000 micrograms. In white mice streptomycin-resistant human tubercle bacilli were found to be as virulent as streptomycin-sensitive strains, and infection with these streptomycin-resistant cultures was not suppressed by treatment of the mice with streptomycin (Youmans and Williston).

References:

- Karlson, A. G.; Feldman, W. H., and Hinshaw, H. C.: Persistence of Resistance of Tubercle Bacilli to Streptomycin During Passage Through Guinea Pigs, *Proc. Soc. Exper. Biol. & Med.* 64:6 (Jan.) 1947.
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Youmans, G. P., and Williston, E. H.: Effect of Streptomycin on Experimental Infections Produced in Mice with Streptomycin Resistant Strains of *M. tuberculosis* var. *Hominis*, *Proc. Soc. Exper. Biol. & Med.* 63: 131-134 (Oct.) 1946.
Youmans, G. P.; Williston, E. H.; Feldman, W. H., and Hinshaw, H. C.: Increase in Resistance of Tubercle Bacilli to Streptomycin, *Proc. Staff Meet., Mayo Clin.* 21: 126 (March 20) 1946.

SMALL FEMALE BREASTS

To the Editor:—A woman, aged 22, who has been previously married and has a child 3 years of age, complains of very small breasts. Physical examination presents no abnormalities other than the one of which she complains. The mammary glands are hardly larger than those of a male. The patient is so concerned about this condition that it is becoming an obsession with her and she is developing a neurotic condition. I have hesitated to use hormonal treatment because it was felt that no definite results could be promised. Will you please outline any possible hormonal treatment that may be of value in this case.

M.D., Alabama.

ANSWER.—It can be stated rather definitely that hormonal therapy, that is, estrogens, will induce growth of the breast only in those patients who have an estrogen deficiency—for example, those with infantile sexual organs or those in the climacteric. The administration of estrogens to a normally menstruating woman seldom gives rise to growth of the breast, although it is possible that massive doses may induce some engorgement of the breast similar to that seen in chronic cystic mastitis. Nevertheless, in those patients in whom the breasts respond to the administration of estrogens there is a recession in size following the cessation of therapy.

TREATMENT OF MERCURY POISONING

To the Editor:—A child 3 years of age ate 2 teaspoonfuls of ointment of ammoniated mercury. What is the treatment? M.D., Massachusetts.

ANSWER.—Two teaspoonfuls of either the 5 or 10 per cent ammoniated mercury ointment contains sufficient mercury to prove fatal to an adult. Ammoniated mercury is about equal in toxicity to bichloride of mercury and in fact, due to the method of manufacture, may contain appreciable quantities of the latter. As variously formulated, this ointment may have as its base only petrolatum, an indigestible but emulsifiable fat, or instead, petrolatum along with hydrous wool fat, a digestible fat. In either case an undetermined portion of the mercury may leave the alvine tract unabsorbed. Notwithstanding, prompt emesis and repeated gastric lavage are indicated. Promptly also

BAL (2,3-dimercaptopropanol) injections should be given. The dose most recommended is 1.2 cc. of the 10 per cent solution per 100 pounds (45.4 Kg.) of weight, introduced intramuscularly four times daily for two days and diminished thereafter. Thus the dose for a 30 pound (13.6 Kg.) child would approximate 0.4 cc. Best results are to be expected if treatment is begun within three or four hours. Delayed treatment with BAL still may be of some value. The total experience in the BAL therapy of mercury poisoning, particularly in children, is so limited that categorical statements may not be made. Any further treatment should be on a symptomatic basis.

STREPTOMYCIN AND RENAL TUBERCULOSIS

To the Editor:—Kindly advise me about the use of streptomycin in renal tuberculosis. What dosage is advisable and how long should treatment last? A. A. Skemp, M.D., LaCrosse, Wis.

ANSWER.—Streptomycin has been used to a limited extent in the treatment of renal tuberculosis. In the report of Feldman (*J. Roy. Inst. Pub. Health & Hygiene* 9:267, 297, and 343, 1946) from data supplied by Hinshaw up to May 1946, 14 patients had been treated with apparently favorable response in 8. The improvement consisted in a decrease in pyuria and in the number of bacilli excreted; in cases in which the bladder was involved the urinary frequency was decreased and the capacity of the bladder increased. In 6 of the improved patients the process was not arrested, whereas in 2 it was possibly arrested. The dosage of streptomycin for treatment in these cases is 1.5 to 2 Gm. a day for eight to twelve weeks.

TREATMENT OF CONDYLOMATA ACUMINATA WITH PODOPHYLLIN

To the Editor:—In some recent publication, which I have misplaced, there was an article relative to condyloma acuminatum and its treatment with podophyllin suspended in liquid paraffin. Please comment on the effectiveness of this treatment and inform me of the proportion and preparation of the proposed treatment.

C. P. McKenzie, M.D., Mexia, Texas.

ANSWER.—In a paper entitled "A Study of the Effects of Podophyllin on Normal Skin, Condylomata Acuminata and Verrucae Vulgaris" (*Arch. Dermat. & Syph.* 56:30 [July] 1947), Sullivan and King described the various methods of treatment with podophyllin. There is also discussion of modifications of treatment by various dermatologists at the end of this article. The use of podophyllin was probably first introduced by Kaplan in 1942 (Culp, O. S. and Kaplan, I. W.: *Condylomata Acuminata. Two Hundred Cases Treated with Podophyllin. Ann. Surg.* 120:251 [Aug.] 1944). In regard to the cytologic effects of podophyllin (Sullivan, B. J. and Wechsler, H. I.: *The Cytological Effects of Podophyllin. Science* 106:433 [April 25] 1947), reports by numerous authors on the use of this drug in various vehicles in the treatment of condyloma acuminatum have, on the whole, been most favorable. Careful attention must be given to the various technics of application in order to avoid untoward results.

TESTOSTERONE IN TREATMENT OF SCHIZOPHRENIA

To the Editor:—Has testosterone propionate been used in the treatment of schizophrenia? If so, I would like a bibliography.

Bryce P. Weldy, M.D., Hartford City, Ind.

ANSWER.—Testosterone propionate has been tried in the treatment of schizophrenia but not extensively. There has not been much indication to use it except in those cases in which there was hypogonadism. A single report by Sutherland and Hoskins was good, but the follow-up has been only for two months. Guiridham reported 4 cases, in 2 of which patients with schizoid elements showed pronounced improvement after treatment with testosterone; on another occasion he reported 3 cases, 1 that of a catatonic schizophrenic person, who responded well. It is probable that the cases in which such treatment is indicated are exceedingly few. The bibliography is as follows:

- Guiridham, A.: Function of Testosterone in Mental Disease. *Bristol Med. Chir. J.* no. 220, 59:1-6, 1942.
Guiridham, A.: Treatment of Mental Disorders with Male Sex Hormones. *Brit. M. J.* 1:10-12 (Jan. 6) 1940.
Helman, S.: Dementia Praecox with Hypogonadism Treated with Testosterone Propionate. *South African M. J.* 12:745 (Nov. 11) 1939.
Randall, L. O.: Effect of Testosterone on Serum Lipids in Schizophrenia, 133:137-140 (March) 1940.
Sutherland, G. F., and Hoskins, R. G.: A Case of Schizophrenia in a Hypogonad Man. *J. Clin. Endocrinol.* 2:647-648 (Nov.) 1942.

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DYSpareunia: A PROBLEM FOR THE GENERAL PRACTITIONER

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New York

Dyspareunia, which signifies painful or difficult intercourse, is a not infrequent disturbance. It has wrought havoc in many marriages and, even if of minor degree, has caused unhappiness and discomfort. Eventually it may produce serious neuropsychiatric symptoms.

Most frequently the family physician is the first to be consulted, particularly by newlyweds whom he has known since childhood or adolescence. Too often the general practitioner, because he has not been instructed in medical school, proves ill qualified to be a useful counselor. Moreover, he will find little useful guidance in the textbooks.¹ To meet this gap, I have reviewed the histories of a considerable unselected series of cases of dyspareunia from my private records, in order to present and clarify the subject and offer guidance in this little discussed field.

The entire series comprised 349 patients representing 1.5 per cent of the patients encountered in office practice over a period of years.² Of the 349 patients, 105 (29.6 per cent) complained solely of dyspareunia, 165 (47.7 per cent) gave it as the main complaint and 79 (22.7 per cent) mentioned it incidentally, usually at a later visit, after their trust and confidence had developed to a greater degree.

In 113 patients, in addition to dyspareunia, other complaints were elicited (table 1).

Of the entire group of 349, 156 patients had become pregnant (44.6 per cent); 128 had borne one or more children, the remaining 28 having abortions only (1 had twelve). One hundred and ninety-three, or 55.3 per cent, had never conceived, but only 39 complained of sterility.

In 114 patients the trouble had existed since marriage (table 2). This included 37 in their honeymoon (arbitrarily limited to the first month or two of marriage).

1. The literature is widely scattered. Most informative, especially in regard to local lesions, is Dickinson, R. L., in Nelson's Loose Leaf Surgery, New York, Thos. Nelson & Sons, 1932, vol. 7, chap. 32, p. 681. Other references are: Bell, W. B.: Disorder of Function, in Eden, T. W., and Lockyer, C.: The New System of Gynaecology, London, Macmillan & Company, 1917, vol. 1, p. 397; Crossen, H. S., and Crossen, R. J.: Diseases of Women, ed. 9, St. Louis, C. V. Mosby Company, 1941, p. 806; Curtis, A. H.: A Textbook of Gynecology, ed. 4, Philadelphia, W. B. Saunders Company, 1942, p. 619; Novak, E.: Textbook of Gynecology, ed. 2, Baltimore, Williams & Wilkins Company, 1944, p. 509.

2. To arrive at a percentage, a sample of 7,124 consecutive histories were scrutinized; 103 cases of dyspareunia were found, or 1.4 per cent.

As a generalization it may be stated that other factors being alike, the gravity of dyspareunia is proportional to the length of its duration.

Patients localized their pain as introital, deep or both. In 5 patients the site was not obtained (table 3).

LOCAL CAUSES

Primary Dyspareunia.—Primary dyspareunia, of which honeymoon dyspareunia is the most striking example, begins with the first attempts at intercourse (113 cases, 32.7 per cent). Of these, 37 were honeymoon cases, the remainder having persisted from one to twenty years.

The dyspareunia, as mentioned, may be introital or deep. Honeymoon symptoms usually are introital, resulting from hymeneal tears, lacerations of the fourchette or bruises of the urethral meatus.³ A thick, rigid hymen may prove an insurmountable or painful obstacle.⁴ Subsequent to the injury superficial ulcerations develop which prove exquisitely painful to the touch.

The treatment of such lesions usually is simple. Twin beds, interdiction of intercourse, hot sitz baths and, if the vulva is painful and swollen, wet dressing of 0.5 per cent aluminum acetate. Occasionally codeine and sedation may be required. If pronounced spasm, vaginismus or anxiety has already appeared, after healing is complete, a matter of ten to fourteen days, the tube treatment (discussed later in this article) should be resorted to for two weeks before intercourse is resumed.

Forty-three patients showed introital lesions due to inflammatory causes—skeneitis (inflammation of periurethral glands), bartholinian abscess or cyst, inflammation of labial sweat glands, nonspecific leukorrheal irritation (including *Trichomonas* infestation). The treatment of these lesions was along orthodox lines. Bartholinian cysts or abscesses were excised; superficial labial inflammations kept clean and dry; leukorrhea relieved by cervical and vaginal applications of silver nitrate and merbromin ("mercurochrome"), 2 per cent, and douches. No case of gonorrhea was encountered.

3. More serious injuries may confront the physician for treatment. Over an interval of years I have been called late at night on three occasions to stop serious hemorrhages due to wedding night hymeneal lacerations. In 2, packing sufficed; 1 required hemostatic suture. Twice large perivaginal hematomas were encountered. These subsided spontaneously. In 1 patient coitus (which had been indulged in without difficulty with the same partner for months) caused profound shock due to perforation of the posterior fornix; cure was effected with short iodoform pack in Douglas cul-de-sac and morphine.

4. In the entire series, intact hymen was encountered twenty-five times. Eleven of these patients were honeymooners. In 5, tubes cured; in 3, hymenectomy was performed. The treatment of 3 was not in my care. The duration was thirteen years in case 2, and ten years in a 46 year woman (husband impotent—no therapy attempted!). The remainder were married from one to six years.

Seven cases of congenital septums required surgical excision. Absence of vagina is a bar to coitus and will not be considered here.⁵

Secondary Dyspareunia.—Introital: Secondary introital changes caused dyspareunia in 70 patients (20 per cent). This signifies that the trouble developed after the honeymoon, in some cases many years later.

TABLE 1.—Additional Complaints

Dysmenorrhea	32
Sterility	39
Menorrhagia and metrorrhagia.....	26 (fibroids 15)
Amenorrhea	8
Cystoectocoele	8*

* Of the 8, only 1 had uterine prolapse. She was cured by a Manchester operation. Two with rectocystocele evinced strong defense reactions. Five had rectocystocele (duration, one to thirty-two years), experiencing introital (4) or deep (1) dyspareunia.

TABLE 2.—Duration of Dyspareunia

Duration of less than 1 year.....	107
1-2 years	84
2-5 years	52
5-10 years	38
10 or over	20
Not accurately ascertainable.....	48

Menopausal involution, dryness and thinning of the mucosa were at fault in 23 cases. Acute onset may follow roentgen sterilization. In mild cases, lubrication proved sufficient to relieve. When pronounced senile changes were noted, occasional twelve day courses of estrogenic vaginal pessaries of 2,000 international units proved helpful. The condition is particularly disturbing when the women are young (artificial menopause) or in older women married to younger husbands.

Too tight perineorrhaphies following plastic repair produced dyspareunia in 33 women, in the majority at once after the operation; in a few, years later when the superadded menopausal shrinkage further diminished the lumen. In 13 women, overtightness of episiotomy repair caused the trouble post partum. In 1 patient, kraurosis was at fault.

TABLE 3.—Site of Dyspareunia

	No.	Percentage
Introital	207	60
Deep	100	29
Both	37	10
Not ascertained	5	1

TABLE 4.—Causation of Primary Introital Dyspareunia

Honeymoon lesion	37
Rigid hymen	33
Vulvovaginal inflammation	24
Leukorrheal irritation	19

In some instances, lubrication and more dorsal intro-mission relieved the pain. In a number, a reverse plastic operation was required (vertical incision through the fourchette and into the perineum with transverse repair of the resulting gap). In some, tube treatment brought relief. In kraurosis, vulvectomy was performed, primarily for the precancerous lesion, simultaneously curing the dyspareunia.

Deep Dyspareunia.—Deep dyspareunia is noted particularly in retroflexion with prolapsed ovaries, in the presence of pelvic inflammation and after postabortal infections.

I never have operated on retroflexion for dyspareunia per se (33 cases). Twice daily knee-chest position (for five minutes, with admission of air by separating the labia or introduction of disconnected douche tip) is prescribed; later, when the uterus is more movable, insertion of an appropriate Hodge or Smith pessary assures antelexion. Two patients operated on by others returned unrelieved, their trouble being largely psychogenic in origin.

Dyspareunia due to pelvic inflammation (47 cases) required treatment of the underlying lesion. Exudates are relieved by rest, heat, diathermia (2 cases due to gold intracervical contraceptive button); adequate penicillin therapy (1,000,000 units in three and one-half days). Rarely hydrosalpinges or pyosalpinges required operation. In a few chronic conditions of secondary contracture of the pelvic connective tissues, the vagina was stretched by mercury colpeuryesis.

In 7 patients deep dyspareunia was cured by forbidding the use of the contraceptive diaphragm. These women all submitted to intercourse at least once daily. The site of pain was in the tense, spastic sacrouterine ligaments, traumatized by the frequent prolonged pressure exerted by the diaphragm.⁶

TABLE 5.—Causation of Secondary Introital Dyspareunia

Menopausal involution	23
After perineorrhaphy	33
After episiotomy	13
Kraurosis vulvae	1

In 10 instances of endometriosis, the first complaint was that of deep dyspareunia. The treatment is that of the endometriosis which, if widespread or accompanied by chocolate cysts, required radical operation.

Combined Dyspareunia.—In 37 patients, both introital and deep dyspareunia was complained of. They fell into various categories, inflammation predominating. A number showed a hypersensitive pelvis (accompanied by general hyperesthesia) most often resulting from incomplete deturgescence due to coitus interruptus.

NORMAL PELVIC FINDINGS

In 63 patients (17.5 per cent), the pelvic findings were approximately normal. These patients were the most difficult to classify and cure. Of these patients who were found locally normal, neuroses and psychoneuroses were evident in 54.8 per cent, contrasting with those patients in whom recognizable pelvic lesions were found and who showed only half as many nervous symptoms (24.6 per cent).

Consequently in classification and in treatment there is a sharp distinction in patients with dyspareunia between those with local pelvic lesions calling for local treatment and those in whom neuroses, psychoneuroses and general psychosomatic symptoms predominate. These may require psychotherapy. That my material does not differ greatly from that of other gynecologists is shown by Dickinson's observations,¹ who, in 170 patients with dyspareunia, found that the psychic factor

6. One woman not included in this series experienced violent pain in the vulva and vagina with acute dermatitis. Careful investigation uncovered a suddenly developed allergy to rubber (a rubber condom was used).

5. Frank, R. T.: The Formation of an Artificial Vagina Without Operation (Intubation Method), New York State J. Med. 40:1669 (Nov. 15) 1940.

predominated in 25 per cent. In mine, the percentage was 24.6 per cent of 349 patients, an almost identical figure.

PSYCHOGENIC DYSPAREUNIA

The recognition of dyspareunia resulting from neurogenic causes is nothing new. Huguier⁷ in 1834 wrote his thesis on vaginismus. Dupuytren⁸ in 1839 recognized dyspareunia. Faure,⁹ 1928, deplored the fact that prophylactic measures are rarely feasible and emphasized the effect of lack of love or actual distaste in "arranged marriages," which were the rule in France.

Whether increasing frequency of premarital consultation, enlightenment on the subject of sex or prenuptial self dilatation, as advised by Dickinson,¹ will eventually reduce dyspareunia to a rarity still remains to be seen.

My own education in the evaluation of dyspareunia and in its effective treatment began more than thirty years ago. The literature afforded me little aid. My training largely was autodidactic. It has progressed with the general development of psychology, both normal and abnormal, and psychiatry. A few of these early cases may prove as enlightening to the reader as they were to me.

CASE 1.—The patient, seen June 2, 1915, was 23 years old, had been married one year and experienced dyspareunia without real intromission. Her husband was young, timid and inexperienced. I inserted a large vaginal plug with the patient under anesthesia. She was unable or unwilling to insert the

TABLE 6.—Findings in Deep Dyspareunia (One Hundred Cases)

Retroflexion and prolapsed ovaries.....	33
Pelvic inflammation (parametritis, diseased adnexa, etc.)..	39
Postabortal infection	8
Contraceptive pessary	7
Endometriosis	10
Not ascertained	3

plug subsequently because of pain and vaginismus. On July 13 I excised the hymen and enlarged the introitus by a vertical cut in the perineum, which was stretched and sutured transversely. The dyspareunia improved. The patient became pregnant nine months later. She has not experienced dyspareunia since term delivery.

This case shows that the highly recommended forcible dilatation and even enlargement of the entrance did not at once establish a complete cure. A further milestone in my education was supplied by the next case.

CASE 2.—The patient, a nullipara aged 36, married thirteen years, was referred to me in August 1915 by an internationally prominent internist with the "royal command" to perform an excision of the hymen. The patient was intelligent and nervous and did not want children. Dyspareunia had existed since marriage. The patient was underweight, fully feminine and normal. The hymen was found intact after thirteen years, admitting only the tip of the finger; there was vaginismic general spasm.

Reluctantly, because of the long duration and nervous background, with the patient under general anesthesia I excised the hymen. Three days after the operation, while still in the hospital, the patient tried to jump out of the fifth story window. Within two months she had to be committed to an institution for the now overt psychosis with suicidal tendencies.

I have never forgotten this lesson. It has led me to study the nervous makeup of every patient that I have since encountered as an integral part of every anam-

nesis and examination. These early cases laid the foundation for further study and interest in dyspareunia and (the then as yet not coined term of) psychosomatic symptoms.

When dyspareunia, with or without complicating vaginismus, is based on nonlocal causes or when local complaints are far overshadowed by nervous symp-

TABLE 7.—Neuroses (Sixty-Three Cases)

Local causation noted.....	26 (41.3%)
Retroflexion	6
Postoperative	8
Vaginal septum	1
Inflammatory	7
Menopausal	3
Trauma	1
No local cause determinable.....	37 (58.7%)
Fear of pregnancy.....	9
Amenorrhea	3
Sterility	5
Cancerphobia	2
Analyzed	3
Ill mated	7
Not determinable	8

toms, it indicates a defense mechanism developed by the patient. The defense may be directed against sex and physical congress in general (faulty upbringing, excessive egotism, old maidishness, latent or overt homosexuality), fear of pregnancy, aversion to partner (previous love affair, broken engagement, some physical defect discovered after marriage). Even minor annoyances such as lack of consideration in preliminaries, unpleasant conditions like halitosis or bromhidrosis, may form the basis of aversion and subconsciously the beginning of resistance and defense.

According to the usual criteria, 63 patients showed pronounced neuroses existing, as well as I could determine, from one month to fourteen years, with an average of two years. Twenty-three patients suffered from more serious psychoneuroses. Of these, the further course in 3 ended in true psychoses. The duration was from four months to fourteen years, with an average of five years.

The causal factors were difficult to elicit, particularly in cases of long duration, then being overshadowed by the anxieties, fears, grievances and the often irrelevant and multiple psychomatic symptoms which dominated

TABLE 8.—Psychoneuroses (Twenty-Three Cases)

Local causation noted.....	5 (21.7%)
After hysterectomy	2
After vaginal plastic operation.....	2
Rigid hymen	1
No local cause determinable.....	18 (78.3%)
Anxiety and conflicts.....	5
Pseudocyesis	2
Multiple operation for psychosomatic symp- toms, unimproved	4
Ill mated	3
Not determinable	4

the picture at the time of examination. Dissatisfaction or anger against the husband, in some cases fully justified, was elicited in a number of instances (vide infra).

A breakdown of the data relating to causation is instructive (tables 7 and 8).

In the patients with neuroses, 58.7 per cent, and in those with psychoneuroses, 78.3 per cent showed no local lesion to account for the fixation of their trouble. It became necessary to explore more deeply into the origin and cause. That this causation was not too easily recognizable is demonstrated by the fact that at least 4 had been subjected to multiple operations directed to

7. Huguier: Constriction spasmodique du sphincter au vagin, Thesis, Paris, 1834; cited by Faure and Siredey.⁹

8. Dupuytren, 1839, cited by Faure and Siredey.⁹

9. Faure, J. L., and Siredey, A.: *Traité de gynécologie*, ed. 4, Paris, Octave Doin, 1928, p. 565.

correct functional psychosomatic symptoms, with no relief but rather with increase of disability. Yet these same patients were ready and eager to submit to further operative intervention!

Considerable exploration was needed to arrive at even the scant data contained in the preceding tables (tables 7 and 8). These patients have this in common, that they focus their complaint on the pain, discomfort, aversion, fear, fatigue or humiliation which they experience before, during or after coitus. Some develop a physical defense reaction (vaginismus, 7 cases) which may extend to the abdominal and extremity muscles, and others use evasion or excuses of ill health to avoid coitus. A number of these patients had undergone or were undergoing formal psychoanalysis.

THE HUSBAND

Before discussing treatment of these patients, a consideration of the husband is indicated. My data are restricted by the fact that I had no direct contact with the male partner in many instances, and therefore was limited in my search for the truth by the often prejudiced statements of unhappy and disgruntled wives.

The data in table 9 on 36 husbands are available and appear well founded.

TABLE 9.—Data on Thirty-Six Husbands

Impotence	10
Too frequent coitus (daily or more often) ..	6
Quarrelsome and demanding	5
Premature ejaculation	7
Overprolongation of the act	2
Definite overweight	3
Psychopath (later interned)	1
Ill health	1
Inexperienced	1

Less classifiable complaints such as brutality, inconsiderateness, drunkenness and unwillingness to take contraceptive precautions were not uncommon. In a number of instances, a genitourinary specialist to whom these husbands were referred was able to help them.

TREATMENT

During the course of years, I have developed a simple technic which has rarely failed in patients who wanted to be cured! The attitude of the patient, therefore, must be explored carefully and minutely at the outset. This inquiry can be accomplished in a surprisingly short time if one's manner and approach are genuine, unembarrassed, quite impersonal but kindly. The feeling toward the husband, the presence or absence of libido, the hopes and fears and anticipations—whether reality has fulfilled or fallen short—can be obtained rather readily from the average patient. The site, character and intensity of the pain, the time of its occurrence and whether trial has shown progressive decrease or increase of its intensity help to complete the picture. If because of timidity, prudery or fright—in contrast to deliberate noncooperation or purposeful concealment or lying, which signify deeper psychic disturbances demanding trained psychiatric approach—the situation remains unclear, then the first examination must be limited to painless maneuvers, if necessary, omitting vaginal examination completely. Coitus is forbidden, and hot sitz baths, sedation and twin beds are ordered.

At the next visit (five to seven days later) the improvement in "entente" will be great. A short separate interview with the husband, who has been invited

but too often fails to attend, will enlighten him and enlist his full cooperation unless he is stupid or purposely uncooperative, the latter usually signifying some defect such as impotence, which he desires to conceal.

Local examination (one finger vaginal, small speculum) shows entire absence of local lesions and local causes, but may arouse spasm (local or general), even though no pain is elicited by the deliberate and calculated gentleness of the examination.

Treatment with Tube.—With the patient still in the lithotomy position, I then produce with emphasis and almost ostentation, two pyrex test tubes, one $\frac{5}{8}$ inch (0.96 cm.), the other 1 inch (2.54 cm.) in diameter, instruct the patient for the first week to insert the smaller tube, well lubricated, twice daily for ten minutes by the clock. The patient's position should be dorsal, with thighs drawn up and separated, the introduction deep, and this maneuver should be repeated at least three times at each session. The patient then herself introduces the tube under my supervision, and if necessary, is repeatedly instructed and encouraged further. The larger-sized tube is used during the second, and in difficult patients, also during a third week. The patient is assured convincingly that at the end of this period coitus will not only cause no pain but may prove pleasurable.

The result has been almost 100 per cent cures in one or at most two office visits except in the few in whom a deep-seated psychic basis exists.

Several of the patients have informed me that they were undergoing or shortly before had completed a course of psychoanalysis. Under these conditions I have insisted on first obtaining the consent of the analyst, which has been accorded in every instance. The result in those patients particularly has been good as far as overcoming local pain and spasm is concerned, as well as some of their apprehension.

In spite of the multiple factors which form the background of dyspareunia—local lesions, the upbringing, personality, nervous constitution, health and compatibility of both partners—few conditions encountered by the physician respond more readily to adequate recognition and treatment. Certainly no more grateful patients than those cured of this source of pain and unhappiness can be found.

To recapitulate, the treatment of dyspareunia based on local lesions is direct and simple, as has already been shown. Not infrequently emotional, social and psychic factors will crop up as side issues. If the patient is open minded, cooperative and desires to be cured, enlightenment is not difficult. If possible, a free discussion between husband and wife, in the presence of and with the physician as guide and moderator, is most helpful. It may then become evident that the husband is partly or entirely at fault and that he is the one who needs local or psychiatric treatment.

A more cautious approach is necessary in those patients in whom the local findings are normal or minimal and the duration of the trouble of long standing, and who, in spite of the fact that they seek advice, evince a balky resistance to investigation. The predominantly defensive nature of their reaction, even if it is camouflaged by unrelated psychosomatic symptoms, anxieties, excuses and accusations against their husbands, is readily recognizable. In the worst cases of this type, unless the patients have been referred to me by a psychiatrist or psychoanalyst who requests that

I try to ameliorate the local symptoms, I try to determine whether the patient wants to be cured. Some have rationalized the situation, have arrived at a status quo which satisfies them, particularly if the husband is acquiescing, indifferent or has found solace elsewhere. Such patients should not be treated; otherwise you run the risk of catastrophe as in case 2. If the patient wants to be cured, then the tube treatment is successful in the vast majority of cases as far as relieving local pain, spasm and resistance is concerned. It will not cure phobias, it will not make a disliked husband attractive, but it will make coition physically painless and, when no deep-rooted prejudices exist, responsiveness may develop.

SUMMARY

Dyspareunia in a series of 349 patients represented an incidence of about 1.5 per cent of gynecologic private patients seen during the same period. In approximately 30 per cent, dyspareunia was the sole complaint; in 48 per cent it was the major complaint, and in 22 per cent it was an incidental complaint. In 30 per cent the dyspareunia has existed since marriage. In the entire series the duration varied from honeymoon (one to sixty days) to ten years or more. The site of pain was introital in 207 (60 per cent), deep in 100 (29 per cent); both superficial and deep in 37 (10 per cent), and not ascertained in 5.

Localizable symptoms required local treatment in addition to psychic suggestion. Nonlocalizable and "psychogenic" cases required different therapy.

Symptoms which developed with marriage were termed primary; they were termed secondary when onset occurred later.

Primary introital dyspareunia most commonly developed as a consequence of coital trauma, local infection and leukorrheal irritation (including *Trichomonas*). In 7 cases, congenital vaginal septums were at fault. Absence of the vagina is not discussed. Secondary introital dyspareunia (20 per cent) resulted from menopausal shrinkage, too tight plastic or episiotomy repair or kraurosis. Deep dyspareunia arose from retroflexion with prolapsed ovaries, deep pelvic inflammations, parametritis, exudates, adnexitis and endometriosis. Combined introital and deep dyspareunia occurred in 37 patients.

Normal pelves were noted in 63 patients. Fifty-five per cent of these women showed neuroses and psychoneuroses; this was in sharp contrast to the percentage of the total figure (349), which was only 25 per cent.

In psychogenic dyspareunia the initial local or general factors may disappear, leaving no trace of any initial local causation (64 per cent); in the remainder some inciting local cause was still determinable.

The husband problem predominated in 36 cases. Most probably it was an important factor in many more.

In primary and secondary dyspareunia, local therapy combined with enlightenment and orientation proved effective.

In psychogenic dyspareunia great caution must be exercised in attempting to treat dyspareunia of long duration. The attitude of the patient is decisive; only those who manifestly wish to be cured should be treated. Those in whom the defense and resistance complexes predominate should be left undisturbed and if possible referred to a competent psychiatrist for preliminary treatment.

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ECTOPIC PREGNANCY

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"The history of the recognition of pregnancy proceeding outside the cavity of the uterus, the gradual understanding of its gravity and the development of modern methods of its treatment, forms one of the most fascinating episodes in that epitome of human intellect, its brilliancies and its lamentable failures, the history of medicine." So wrote Schumann¹ in his excellent monograph published over a quarter century ago. He stated that the first recorded case appeared in Bauhin's "*Gynaecorum sive de Mulierum Affectibus Commentarii*" (1586), being credited to Albucasis, an Arabian physician who practiced in Spain about the middle of the eleventh century. In 1604 Riolan described the classic picture of ruptured eccyosis; however, over a century elapsed before Dionis (1718) presented his commendable discussion on etiology. In 1759 Bard of New York operated in a case of abdominal pregnancy, the first type of ectopic gestation to be treated surgically. By 1876 Parry had collected 500 cases of extrauterine cecyosis with a mortality of 67.2 per cent. Seven years later Tait performed what is considered the first deliberate operation for ruptured tubal pregnancy. In the same year (1883) Briddon so operated in the United States.

During the twentieth century the literature on this subject has become voluminous, but few articles present a series of more than 300 cases from a single institution. In the last twenty years papers on ectopic pregnancy have been presented in this section by Behney,² Echols,³ Brown and von Graff⁴ and Schaeffler.⁵

The number of proved cases of ectopic pregnancy managed at the Charity Hospital of Louisiana at New Orleans since Jan. 1, 1906 has exceeded the thousand mark; consequently, it was logical to conclude that some of the data derived from the perusal of these records would prove appropriate at this centennial meeting. Although our institution celebrated its hundredth anniversary in 1933,⁶ records prior to 1906 are not available. Previous reports on this subject from the New Orleans Charity Hospital include those of Graffagnino,⁷ whose study covered the years 1906 to 1919, Graffagnino Seyler, and Bannermann,⁸ who brought certain statistics up through 1936, and Tyrone, Romano and Collins,⁹

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Read before the Section on Obstetrics and Gynecology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

1. Schumann, E. A.: *Extra-Uterine Pregnancy*, New York, D. Appleton and Company, 1937.

2. Behney, C. A.: *Extra-Uterine Pregnancy: Study of One Hundred Sixty-Seven Consecutive Cases*, J. A. M. A. **95**: 1557 (Nov. 22) 1930.

3. Echols, C. M.: *Ectopic Pregnancy: Observations in One Hundred and Three Cases Seen in Private Practice*, J. A. M. A. **103**: 1686 (Dec. 1) 1934.

4. von Graff, E., and Brown, P. T.: *The Diagnosis of Ectopic Pregnancy*, J. A. M. A. **108**: 371 (Jan. 30) 1937.

5. Schaeffler, G. C.: *Double Uterus with Pregnancy*, J. A. M. A. **117**: 1516 (Nov. 1) 1941.

6. Charity Hospital had its beginning in 1737; however, the first building on its present site was not erected until 1833.

7. Graffagnino, P.: *Ectopic Pregnancy*, Am. J. Obst. & Gynec. **4**: 148, 1922.

8. Graffagnino, P.; Seyler, L., and Bannermann, M. M.: *Tubal Pregnancy*, Am. J. Obst. & Gynec. **35**: 875, 1938.

9. Tyrone, C. H.; Romano, S. A., and Collins, C. G.: *Tubal Gestation*, Am. J. Obst. & Gynec. **30**: 112, 1935.

who were chiefly interested in the mortality rate from 1924 to 1934. This dissertation includes data derived from investigation of the entire series of 1,059 cases with limitation of certain details to the cases of the last ten years, inasmuch as the records of that period are far superior to those of the preceding years. The figures do not include instances of abdominal pregnancy,

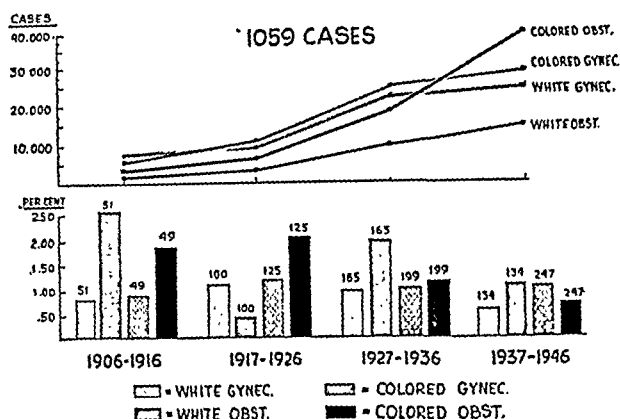


Fig. 1.—Racial comparison of the incidence of ectopic pregnancy at the Charity Hospital at New Orleans.

because that type of ectopic gestation is so important that it is worthy of individual consideration. Such a review may be found in the December 1946 issue of *Obstetrical and Gynecological Survey*.¹⁰

RACIAL INCIDENCE

As shown in the first composite graph (fig. 1) the incidence is compared racially and in relation to deliveries and gynecologic admissions at the New Orleans Charity Hospital in the last forty years.

In the first decade there were 51 white and 49 Negro women with ectopic gestation among 2,048 white and

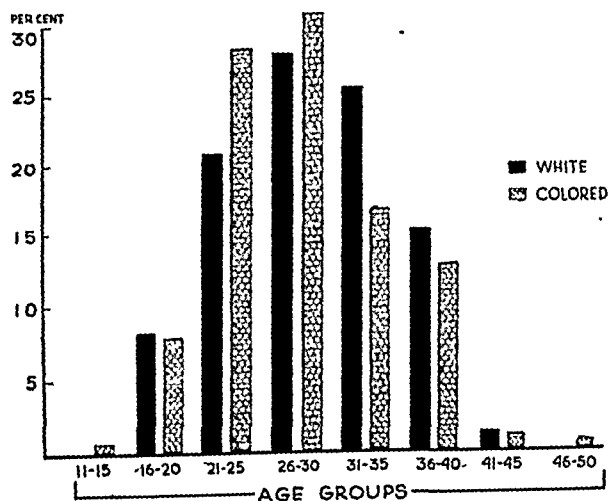


Fig. 2.—Age incidence among Negro and white patients.

2,769 Negro women delivered. The incidence was 2.5 per cent for the white patients and 1.77 per cent for the Negro. In the same period there were 6,470 white and 5,995 Negro gynecologic admissions, resulting in an incidence of 0.79 per cent for the white and 0.82 per cent for the Negro.

During the second decade 100 instances of extrauterine pregnancy occurred among white and 125 among Negro women, with 3,583 white and 6,370 Negro births, giving the figures of 2.79 per cent and 1.96 per cent, respectively. There were 9,077 white and 11,188 Negro gynecologic admissions, with an incidence of 1.11 per cent for both races.

The third ten year period had 161 cases among white and 192 among Negro patients, 9,336 white and 18,063 Negro deliveries and 22,643 white and 24,147 Negro gynecologic admissions. The incidence among white and Negro patients was 1.78 per cent and 1.11 per cent for the former group and 0.73 per cent and 0.82 per cent for the latter.

Since 1936 there have been 134 cases among white and 247 among Negro patients, with the delivery figures reaching 13,985 and 40,023, giving an occurrence of 0.95 per cent and 0.59 per cent. The number of gynecologic admissions has increased to 23,874 white and 28,479 Negro, causing a percentage of 0.55 and 0.84.

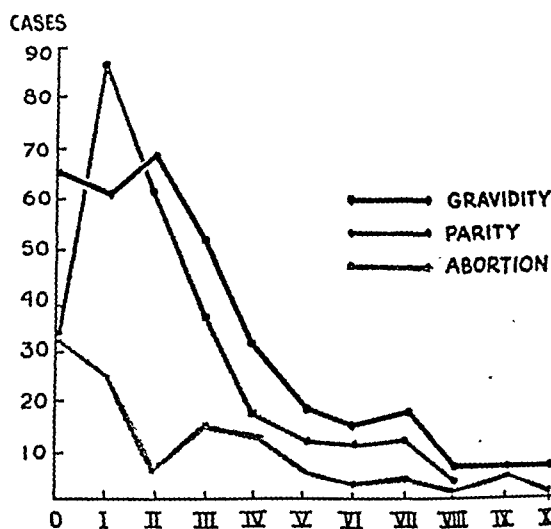


Fig. 3.—Previous pregnancies.

It should be pointed out that during the first two decades the white obstetric patients consisted largely of those with complications, whereas during the second twenty years more and more patients with normal pregnancy have been admitted, so that the incidence of 0.95 per cent begins to approach the true incidence of ectopic cyesis to term intrauterine gestation. This is more evident among the Negro race, as is indicated by the incidence of 0.59 per cent in the last decade, when 40,023 Negro deliveries, representing over three fourths of those for New Orleans, occurred in our institution. In the future the actual relation to deliveries as recorded by hospital checks will be more accurate, inasmuch as more and more obstetric patients will be institutionalized.

In the last forty years there has been a sharp increase in the gynecologic admissions to Charity Hospital; however, the frequency of ectopic pregnancy has varied little. Even though the number of cases of extrauterine gestation is larger for the fourth decade, the percentage occurrence is the lowest during the entire period of this study. When one compares the gynecologic admissions, one notices that the incidence is higher in the Negro race, as one would expect in our locality, since the incidence of salpingitis is higher in this race.

AGE

Inspection of figure 2, which is computed on the basis of 100 per cent for each race, reveals that the majority of ectopic pregnancies in the Negro group in this series occurred between the years of 21 and 30, whereas for the white group the greatest incidence was found in the 26 through 35 age range. The youngest white patient was 16 years of age and the eldest 42. The age limits for the Negro patients were 15 and 48 years.

PREVIOUS PREGNANCIES

Only 66 of the 381 patients comprising the series from 1937 to 1946 had not been previously pregnant, as is shown by figure 3. Excluding the extrauterine gestation which caused them to come to the hospital, there were 62 primigravidas, 69 secundigravidas and 52 tertigravidas. Somewhat unexpectedly, we found 17 septigravidas.

Of those who had been gravid once or more, 34 had failed to carry a fetus to the stage of viability; 88 had carried one gestation near or to term, 62 were secundiparas and 37 were tertiparas.

Twenty-six gave a history of one abortion; 7 admitted two abortions, and the remaining 55 had undergone three or more abortions, one having a total of thirteen.

Thirteen (3.4 per cent) of the patients during the last decade had undergone proved previous ectopic pregnancy, the majority having been managed at Charity Hospital. This percentage is almost identical with that reported by Smith,¹¹ who found an incidence of 3.6 per cent among 1,608 patients operated on by members of the American Gynecological Society, and by Mason and Storrs¹² in their study of 400 cases of extrauterine pregnancy. Also, we found, as did Fitzgerald and Brewer¹³ in their study of 500 cases, 402 of which were managed in Cook County Hospital, that a long period of sterility preceding the extrauterine pregnancy was not the rule in this group.

In 750 cases the tube involved was found to be the right in 60.1 per cent and the left in 39.9 per cent. The tubal site most commonly found was the ampulla, next often the isthmus and least often the interstitial portion.

Of these tubal pregnancies 12.8 per cent were intact, 70.8 per cent were ruptured and 16.4 per cent were classified as abortion.

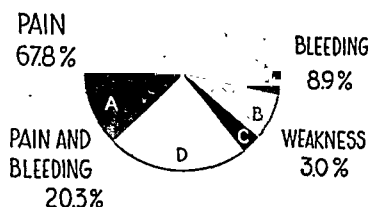


Fig. 4.—Chief complaint. A, pain, 67.8 per cent. B, bleeding, 8.9 per cent. C, weakness, 3 per cent. D, pain and bleeding, 20.3 per cent.

2 cases of bilateral tubal gravidity. Although the diagnosis of ovarian pregnancy has been made at the New

Orleans Charity Hospital several times, only 1 case record meeting all of the prerequisites for such a designation could be found by us.

Of the patients treated in the past decade 69 (18.1 per cent) had been subjected to previous surgical treatment of the lower part of the abdomen, the most frequent procedure being appendectomy.

As confirmed by the pathologists, 134 (36 per cent) patients had salpingitis. No instance of salpingian tuberculosis was found.

The infrequency of recorded tubal malformations and evidences of obstruction due to tumors in this series is conspicuous.

CHIEF COMPLAINT

In this study it was noted that 67.8 per cent of the patients presented a chief complaint of pain; 20.3 per cent complained chiefly of pain and bleeding, while 8.9 per cent complained of bleeding. Weakness was recorded as the major complaint in only 3 per cent of the cases. This confirms the widely accepted belief that pain or bleeding or a combination thereof is responsible for these patients' trips to the hospital. Nausea, vomiting, syncope and other secondary symptoms were often found in the histories, but these require no special discussion.

Only 8.8 per cent of the patients arrived at the hospital within twelve hours of the onset of the principal symptom; 12.3 per cent complained for one day and 4.4 per cent for two days; 17.2 per cent gave a duration of one to two weeks, 27 per cent two weeks to two months and 1.57 per cent had complained for four to five months.

The pain of ectopic pregnancy may vary considerably, depending on the status of the embryo, the intactness of the salpinx, the amount of hemorrhage and the threshold of the individual. Figure 5 reveals that 43.9 per cent of the patients experienced pain in the lower part of the abdomen, 30.3 per cent in the right lower quadrant, 17.5 per cent had it in the left lower quadrant and in 8.3 per cent it was recorded as abdominal. Of the records disclosing the location of the pain in one of the lower quadrants there was an accurate correlation with the ectopic in 79 per cent. Pain in the shoulder occurred in 15.3 per cent. The onset was sudden in 68.2 per cent and gradual in 31.8 per cent of the cases. In 69 per cent it came without exertion, but in 31 per cent it appeared during exertion. In 44.9 per cent of the latter group, the patient was in the bathroom. The severity was classified as mild, 4.8 per cent, moderate 11.8 per cent and marked 83.4 per cent. It was intermittent in 85.1 per cent and continuous in 14.9 per cent.

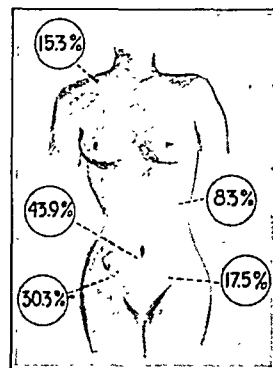


Fig. 5.—Pain. The onset is gradual in 31.8 per cent of the cases, sudden in 68.2 per cent; the onset is with exertion in 31 per cent of the cases, and without in 69 per cent; the pain is mild in 4.8 per cent of the cases, moderate in 11.8 per cent and severe in 83.4 per cent; it is continuous in 14.9 per cent of the cases and intermittent in 85.1 per cent.

LAST MENSTRUAL PERIOD

Data regarding the last menstrual period is of great importance in making the diagnosis of ectopic gestation. According to the records 1.71 per cent of the patients were having what they considered a "regular menstrual

11. Smith, R. R.: Repeated Ectopic Pregnancy, *Am. J. Obst.* 64: 401, 1911.

12. Mason, N. R., and Storrs, R. W.: An Analysis of Four Hundred Cases of Extra-Uterine Pregnancy, *Boston M. & S. J.* 189: 914, 1923.

13. Fitzgerald, J. E., and Brewer, J. I.: Extra-Uterine Pregnancy, *Am. J. Obst. & Gynec.* 50: 264, 1935.

period" at the time of hospital entry. Four and seven-tenths per cent stated that the last menses occurred two weeks prior to admission; 5.9 per cent, three weeks and five weeks. Six and eight-tenths per cent had amenorrhea for four weeks; 9.95 per cent six weeks and 9.11 per cent seven weeks. The greatest percentage

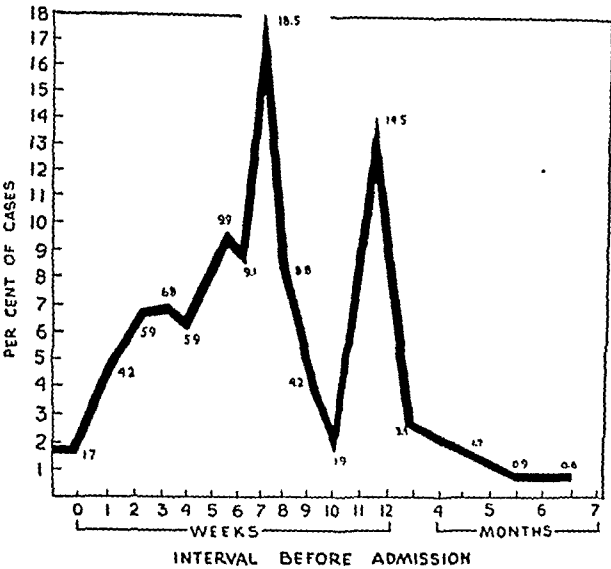


Fig. 6.—Last menses.

(18.5 per cent) gave a history of amenorrhea for two months. The figures then fell at the ninth and tenth weeks to 8.3 per cent and 4.27 per cent, respectively. After dropping of the percentage to 1.99 for an amenorrheic period of eleven weeks, a precipitous rise to 14.3 per cent was found for the three month group. Three and thirty-nine hundredths per cent observed their last menstrual period four months previously, and 0.57 per cent seven months, as is shown by figure 6.

Estimation of the duration of the pregnancy from the menstrual history and gross observations reveals that rupture tends to occur earlier in the isthmus of the salpinx than in the ampulla.

In the study of the records of the last ten years in 32 instances without rupture or tubal abortion, in only 4 was there no abnormality of uterine bleeding. The remainder exhibited amenorrhea and/or "spotting." Two cases of "flooding" were attributed to associated conditions. From the historical viewpoint one may confuse the "spotting" case with threatening uterine abortion, while the ones presenting "flooding" are apt to be misdiagnosed as incomplete abortions, myomas or ovarian cysts.

In this group tenderness was found to be the most important sign (table 1). In over 90 per cent it was of the abdominal type. In 80 per cent cervical manipulation resulted in pain. At the time of admittance bleeding via the vagina was present in 76.8 per cent. An adnexal mass was recorded as being palpable in 43.3 per cent. The location of the ectopic pregnancy was stated in 31 per cent with an accuracy of 87.6 per cent. The contents of the cul-de-sac were regarded as abnormal in 39.6 per cent.

In 13.6 per cent of the cases exhibited there were signs of shock at the time of admittance. In 6.8 per cent shock developed after entrance into the hospital.

In this connection it is well to point out that even though the history is of prime importance in the diagnosis of ectopic gestation the patients should be given the benefit of a careful pelvic examination. Such an investigation must be performed with an understanding degree of gentleness in order to prevent the rupture of a gravid tube or to aggravate bleeding. Undoubtedly many patients that have been discharged from hospitals with a diagnosis of threatened abortion and later returned with rupture of a tubal pregnancy would have received a correct diagnosis if they had been properly examined. Consequently, it is our belief that patients suspected of having threatening, threatened, incomplete or missed abortions should be carefully examined.

Two hundred and forty-six patients had temperature under 99 F.; 53 from 99 to 100; 14 from 100 to 101, and 15 over 101. In the cases in which the temperature was above 102 F., some cause other than the ectopic pregnancy per se was found.

DIAGNOSTIC PROCEDURES

In cases in which tubal pregnancy with intra-abdominal bleeding is suspected and in which the observations are not conclusive enough to justify laparotomy puncture of the cul-de-sac should be done. This procedure was employed in 74 cases during the past ten year period. In 69 cases the result of the test was considered positive and most of the patients promptly operated on. In 5 instances the puncture was interpreted as being negative in result, although blood was found in the abdomen shortly after the colpocentesis.

Considerable has been written about the value of sedimentation rates in the diagnosis of this condition. Such a test was performed in 234 cases with the expected results in most instances. Obviously, tests which allow for the correction of attending anemia are of much more value than the old ones. For 74 patients one or more hematocrit determinations were obtained. Such readings are an excellent means of determining the degree of activity of suspected internal bleeding.

In this study it was found that leukocyte counts were of little value in differentiating extrauterine gestation from inflammatory conditions.

The Friedman-Lapham test was employed in only 28 cases. In 22 of these the result was positive and in 6

TABLE 1.—Signs

	Per Cent
Tenderness:	
Abdominal.....	91.1
Cervical manipulation.....	80.3
Bleeding via vaginam.....	76.8
Adnexal mass.....	43.3
Location of ectopic.....	31.0
Accuracy.....	87.6
Abnormal cul-de-sac contents.....	39.6
Shock syndrome	
On admission.....	13.6
Onset after admission.....	6.8

negative. Suffice it to say that a positive report is of definite value, whereas a negative one calls for reconsideration of the history and physical findings; it should be remembered that hormonal tests for pregnancy are positive in result only if there are living chorionic villi.

Cervical dilatation and uterine curettage were performed in 10 cases, indicating an attempt on the part of the operator to rule out the possibility of incomplete uterine abortion. In all 10 cases laparotomy was done.

PREOPERATIVE DIAGNOSIS

Our perusal of the records shows a progressive increase in the degree of accuracy of the preoperative diagnosis of ectopic pregnancy at Charity Hospital. In the period 1906 through 1920 only 44 per cent had an accurate opinion. In the next group 62 per cent had a correct diagnosis and in the last group, 1937-1946, 82 per cent were properly diagnosed as indicated by figure 7.

Myomas were responsible for inaccuracy in 5.9 per cent of the cases; in the majority of these uterine fibroids were present in addition to ectopic pregnancy. In 4.2 per cent pelvic inflammatory disease was recorded, whereas the main diagnosis should have been extra-uterine cyesis. In 1.6 per cent the patients were scheduled for appendectomies. In a similar percentage the condition was diagnosed as being an abortion. Various and sundry diagnoses were recorded in 2.3 per cent. Litzenberg¹⁴ has pointed out the fallacy of depending on so-called cardinal symptoms in the diagnosis of ectopic pregnancy, inasmuch as so many of the cases are atypical.

In 133 of the last 373 operative cases, salpingectomy was done. A bilateral salpingectomy was performed twelve times. One hundred and seventy patients were

TABLE 2.—Operative Procedures

Unilateral salpingectomy.....	133
Bilateral salpingectomy.....	12
Salpingo-oophorectomy.....	170
Hysterectomy	
Supracervical.....	46
Abdominal total.....	13
Vaginal.....	4
Appendectomy.....	41
Other abdominal operations.....	14
Number of operators.....	109

subjected to salpingo-oophorectomies. Hysterectomy was done in 63 cases; in 46 it was of the supracervical variety, in 13 abdominal total and in 4 vaginal in type. In most instances in which hysterectomy was done the adnexa were removed. Appendectomy was performed forty-one times and other abdominal operations including hysteropexies were performed in 14 cases (table 2).

The number of operators was one hundred and nine, a large majority being residents. In this connection it is well to point out that the extent of the surgical treatment should be governed by the condition of the patient and the observations. Obviously, if the patient is in shock or near the shock level, minimal surgery for cure of the ectopic gestation should be employed. On the other hand, if the patient is in good condition and there is little or no blood in the abdomen the operator will do well to perform any indicated operation. None of these patients subjected to surgical treatment for associated conditions died.

Sixty-nine of the last 373 patients operated on had spinal analgesia; 24 had ethylene anesthesia alone and 96 received cyclopropane; 184 were anesthetized with ether after induction with a gas. The type of analgesia and/or anesthesia should be determined by the condition of each patient.

POSTOPERATIVE CARE

The recovery of patients with ruptured tubal pregnancy is usually rather dramatic. Measures for the relief of pain are required. In this series most of the

patients were catheterized postoperatively. Fifty-one had suction for the relief of abdominal distention. Oxygen was administered to 31 patients. The maximum postoperative temperature was on the first postoperative day in 224 cases, on the second in 74 and the third in 25. The maximum temperature did not exceed

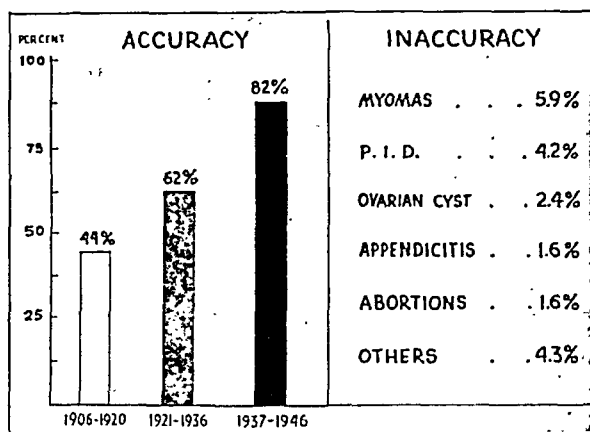


Fig. 7.—Preoperative diagnosis.

101 F. in 207 cases. It was from 101 to 102 F. in 94 cases, 102 to 103 F. in 30 cases, 103 to 104 F. in 14 cases and exceeded 104 F. in only 5 cases. Infusions and transfusions should be given postoperatively as indicated. Wound disruption occurred in 5 cases (1.4 per cent). There were 10 wound infections (2.7 per cent).

MORTALITY

Williams and Corbit¹⁵ analyzed 101 fatalities from ectopic pregnancy, finding that the ratio of ectopic deaths to puerperal deaths is twice as high in Negroes as in the white race.

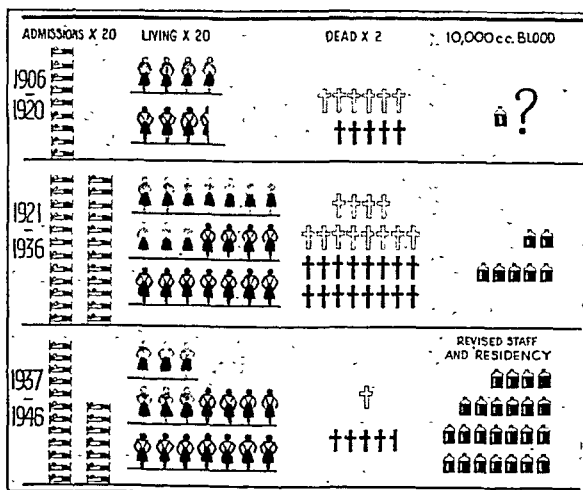


Fig. 8.—Mortality of ectopic cyesis.

In figure 8 each bed and erect figure represents 20 cases. A cross indicates 2 cases. One bottle symbolizes 10,000 cc. of blood. In the ten years following the revision of the staff and the institution of the residency system at the New Orleans Charity Hospital only 2 deaths occurred among white and 9 among

14. Litzenberg, J. C.: Some Fallacies in Regard to Ectopic Pregnancy, South. Surgeon 6: 2, 1937.

15. Williams, P. F., and Corbit, J. D.: An Analysis of One Hundred and One Fatalities from Ectopic Pregnancy, Am. J. Obst. & Gynec. 48: 841, 1944.

Negro patients, resulting in an absolute mortality rate of 2.89 per cent. During this time 250 patients were given a total of 239,100 cc. of blood.

Of the deaths there were 5 which could not have been prevented by the hospital staff. Two patients died within five minutes of their arrival. One was brought into the admitting room in profound shock and died while receiving a blood transfusion and while preparation was being made in the operating room for immediate surgical treatment. Another was found to have generalized peritonitis, although she was operated on promptly. The fifth patient died because of massive cerebral apoplexy. At autopsy she was found to have a six month intrauterine pregnancy with an old unruptured noninfected tubal cystis.

There were 6 preventable deaths. One patient remained in the admitting room for one hour and forty-five minutes without receiving blood or being treated surgically. Another died of shock while enroute to the operating room five hours after admission, although the admitting diagnosis was correct. She received only infusions, as blood was not available. A third died during the night ten hours after hospital entry because of inaccurate diagnosis. Death of the fourth, also due to hemorrhage, occurred after two days of hospitalization with repeated transfusions. The fifth patient was operated on and died three days later of pneumonia, for which she was inadequately treated. Death of the last patient was attributable to obstruction of the sigmoid colon on the twentieth postoperative day.

With these data taken into consideration the corrected mortality would be 1.3 per cent. Of the emergency patients it is important to point out that very few had sought medical advice. Their dire state at the time of admission must be blamed on procrastination, as one would expect of patients who are eligible for admittance to a strictly charity hospital.

CONCLUSIONS

One thousand and fifty-nine cases of proved ectopic pregnancy, excluding the abdominal type, have been managed at the Charity Hospital of Louisiana at New Orleans since Jan. 1, 1906. Four hundred and forty-six white and 613 Negro patients constitute the series, the incidence being higher in the Negro race.

The majority of cases in the Negro group occurred between the ages of 21 and 30 years, whereas for the white group the greatest incidence was in the 26 to 35 age range. The white age limits were 16 and 42, while for the Negroes they were 15 and 48.

Only 17.3 per cent of the patients during the last decade had not been previously pregnant. Three and four-tenths per cent of the patients had undergone proved previous ectopic pregnancies.

Of 750 instances with recorded tubal location 60.1 per cent were on the right and 39.9 per cent were on the left.

The chief complaint was pain, pain and bleeding or bleeding in 97 per cent of the cases. Even unruptured and unaborting tubal pregnancies in this series presented abnormal uterine bleeding in the majority of instances.

Although ectopic cystis can lead to rapid death, in the majority of cases abnormalities are observed for many days.

The clinical picture of tubal pregnancy is so typical in many cases that diagnosis is easily made. In others a carefully obtained history and thorough examination of the patient are necessary to prevent diagnostic errors. Puncture of the cul-de-sac, hematocrit determinations,

hormonal tests for pregnancy, blood studies and other procedures must be regarded in the role of aids in diagnosis subject to intelligent interpretation. In certain cases colpocentesis is of great value.

In our institution the residency system, a revision of the visiting staff and the adequate administration of blood have greatly reduced the mortality of this condition.

Working with strictly charity patients at the South's largest hospital causes us to appreciate that education of the patient and early and adequate prenatal care will reduce the mortality and morbidity figures of ectopic gestation.

ABSTRACT OF DISCUSSION

DR. T. J. WILLIAMS, University, Va.: Dr. Beacham's figures confirm the importance of the triad of symptoms of tubal pregnancy: abnormal menstruation, abdominal pain and slight vaginal bleeding. The diagnostic accuracy of 82 per cent is an excellent record. These figures on diagnostic accuracy, however, present only one side of the picture and do not show those instances in which extrauterine pregnancy was diagnosed and not found. Obviously on this basis a 100 per cent accuracy could be obtained by diagnosing extrauterine pregnancy in every gynecologic patient before operation. It is surprising that myomas accounted for the highest number of incorrect preoperative diagnoses. In our experience salpingo-oophoritis and abortions have been most frequently confused with ectopic pregnancy. We agree with the essayist that patients under observation or treatment for abortions should have careful pelvic examinations done under aseptic precautions to rule out ectopic pregnancy. The possibility of extrauterine pregnancy must be constantly borne in mind. We consider every early abortion as a possible ectopic pregnancy until a pelvic examination has been done or the product of conception has been passed. A decidual cast which may be passed must not be confused with placental tissue. The presence of decidua and an absence of chorionic villi on microscopic examination of the tissue which has been passed would establish the diagnosis of ectopic pregnancy. Cul-de-sac aspiration or posterior colpotomy are helpful procedures in distinguishing between blood and inflammatory exudates in the cul-de-sac. This, however, is not necessary in the majority of cases of extrauterine pregnancy. It is perhaps unusual that it was found necessary to remove the uterus in about 16 per cent of the last 373 cases of operation for tubal pregnancy, but, as the essayist has mentioned, the extent of the operative procedures must be governed by the condition of the patient and the amount of blood loss. Dr. Beacham's analysis points out the importance of the replacement of blood loss as a significant factor in the reduction of mortality in obstetric and surgical conditions associated with hemorrhage. The mortality of 2.89 per cent in the 381 cases during the last nine years, in comparison with the mortality of 12.8 per cent in 490 cases during the previous fifteen years, is a dramatic improvement. While other factors such as early diagnosis, early operation, improved anesthesia, chemotherapy and antibiotics have played their part in the improved mortality figures, I dare say that the most significant factor has been the adequate replacement of blood loss.

DR. CHARLES A. BEHNEY, Philadelphia: In our series the percentage of accurate diagnoses was only 61.3 per cent as compared to 82 per cent accurate preoperative diagnoses in Dr. Beacham's series. In our series from the University Hospital, disease of the opposite adnexa, such as salpingitis, perisalpingitis, pyosalpinx, hydrosalpinx or hematosalpinx, occurred in only 22 per cent. Assuredly there must be some other factor in the causation of this disease. Since tubal pregnancy is normal in lower animals, it occurred to us that perhaps a reversal to the lower forms, manifested by infantile uteri or acute anteversion of the uterus, might explain some of these cases. With this in mind, we investigated the frequency of anteversion of the uterus and delayed onset of menstruation. Anteversion of the uterus was reported present in 76 per cent of our series, and menstruation was established later than the fourteenth year in 32 per

cent of the patients. So far as the ages of the patients and previous pregnancies are concerned, Dr. Beacham's statistics coincide with ours. In this report, 60 per cent of the lesions occurred in the right tube. In the University series, 53 per cent occurred in the right tube and 46 per cent in the left. The patients with combined intrauterine and extrauterine pregnancy are of great interest, as are those in whom both tubes were involved coincidentally. I subscribe heartily to Dr. Beacham's diagnostic procedures. A careful history and accurate pelvic examination are of utmost importance. When doubt as to the findings exists, puncture of the cul-de-sac with the needle and colpotomy are the diagnostic procedures of the greatest value. If blood is not discovered in the cul-de-sac, the adnexa can be inspected through the colpotomy wound, and sometimes hemorrhage may be arrested through this approach without resort to laparotomy. Extrauterine pregnancy can be divided into three categories: urgent, nonurgent and obscure. In the urgent cases the condition is easily recognized. The nonurgent cases are those in which the symptoms may simulate other acute pelvic diseases. It is better in these instances to delay operation until every pertinent test can be made. In the obscure group are the patients who have missed three or more periods, in whom the primary condition of extrauterine pregnancy has been followed by secondary abdominopelvic pathologic changes, frequently resulting in extragenital symptoms which lead to hospitalization. The signs and symptoms of the original lesion are never recognized at the onset, and they are subsequently masked by the secondary pathologic changes. May I refer to Polak's warning against multiple operations, especially in the presence of intraperitoneal hemorrhage. When operating for extrauterine pregnancy close the abdomen as soon as the bleeding has been arrested.

DR. CHESTER M. ECHOLS, Milwaukee: Being older than most of you, I can recall vividly an episode which occurred in this section forty years ago this month—that is, in June 1907. At that time the late Dr. Hunter Robb startled the members of our section by advising us never to operate for ruptured ectopic pregnancy while the patient is in the acute hemorrhagic stage of shock. His advice was based on extensive experimentation with animals. He had done a laparotomy on 30 bitches, and deliberately severed the ovarian arteries, then sewed up the abdominal incision and waited to see what would happen. Not one of the animals died of hemorrhage. Hence his advice to wait for the shock stage to pass before operating for ruptured tubal pregnancy. Not since the days of Lawson Tate had there been any advice or proposal so revolutionary in the management of ectopic pregnancy. Within the next few years doctors throughout the land began to learn that women with ruptured tubes not only can but sometimes do bleed to death. In a paper which I read before this section in 1934 on ectopic pregnancy, I ventured the prediction that the time would probably never come when more than 70 to 80 per cent of correct diagnoses would be made before operation. In New Orleans, as you have just heard from Dr. Beacham, they have somewhat exceeded that figure, and I want to compliment them on doing so; but for obvious reasons there is not likely to be much improvement over the figures just heard, because the pathologic changes involved are so varied that the symptoms must likewise be varied, and it is difficult to lay down any hard and fast rules for diagnosis. To date I have had in my private practice one hundred and twenty-three operations for ectopic pregnancy, without a death. But with all that experience I missed the diagnosis in my last 2 cases. Maybe it was because the patients were unmarried women. But that is a poor alibi.

DR. IRVING F. STEIN, Chicago: I wish to emphasize the point made by the essayist that the early diagnosis of unruptured ectopic pregnancy is extremely important. Any method which will facilitate the early diagnosis of this condition should be utilized. For a number of years, I have used gynecography in gynecologic diagnosis and in selected cases of ectopic pregnancy have successfully employed this method. In differentiating intrauterine pregnancy with the symptoms of threatened abortion, corpus luteum cyst and unruptured tubal pregnancy, gynecography serves as a valuable diagnostic aid. It is a simple and safe diagnostic procedure.

DR. B. BERNARD WEINSTEIN, New Orleans: I should like to commend Dr. Beacham on his fine presentation and underscore his plea for conservatism in the salvage of the ovaries. I should like to enter a plea for the possible salvage of an occasional tube. Some of these are tubal abortions. We see much blood; we are all in too much of a hurry, sometimes, to remove the tube on the involved side. With good anesthesia, good preoperative preparation, with blood banks available and blood in use, there is no need for the great hurry which once characterized this procedure, and we can take an extra few minutes to inspect these tubes carefully. Every now and then there is one that can be salvaged. We have had two in the past three years. We were able to secure the bleeding points and reach to the tubes. This was done because the patient had the other tube out in 1 case for a previous inflammatory disease, and in the other for a previous ectopotomy for tubal pregnancy. These patients have been followed. Tubal insufflation was done a month later. These women have good tubes, and in 1 case a pregnancy. I do not mean to say that this should be a routine thing. I heartily subscribe to the fact that the tube in the vast majority of instances must be removed. But every now and then, if we are not in too much of a hurry, we can salvage not only the ovaries but an occasional tube.

SURGICAL TREATMENT OF CANCER OF THE RECTUM AND RECTOSIGMOID

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Cancer of the rectum is an easily diagnosed lesion which when extirpated radically by surgical methods has a most favorable prognosis. While there is small difference of opinion that radical surgery is the method of choice in its treatment, the rediscovery of the "pull through operation" has in recent years created a certain amount of controversy as to the type of procedure most acceptable in the majority of cases. A cursory survey of the literature of a quarter of a century ago would have revealed to the most ardent enthusiast for the sphincter-saving type of operation a paucity of data on favorable end results of such attacks.

In this day and generation of intense haste and progress in the many fields of scientific endeavor, one is often prone to rationalize more than is justified, in order to keep pace with rapidly moving trends. New methods are devised from old ideas which have lain dormant for years, while others which have been discarded because of inadequacy or outmoded by more practical developments are now being revived.

Certainly the milestones of progress in the treatment of cancer of the rectum and sigmoid colon, beginning as long ago as 1826 and labeled with the name of the Frenchman Lisfranc, have created an interesting vista of experience on which to look back. As one reaches the horizon of present day surgery of the lower bowel, one finally views the work of Miles as the greatest contribution in this field of surgery which has yet been made. The combined abdominoperineal resection of the rectum as developed by him has yet to be improved on by any surgeon of this day.¹

¹Read before the Section on Surgery, General and Abdominal, at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

1. Miles, W. E.: A Method of Performing Abdominal-Perineal Excision for Carcinoma of the Rectum and of the Terminal Portion of the Pelvic Colon, *Lancet* 2:1812, 1908.

Since Miles's epic publication there have been innumerable surgeons both great and small who have tried to develop many procedures for the preservation of the anal sphincter in the treatment of cancer of the rectum. In the light of the recent anatomic studies of the lymphatics of the perirectal and pelvic tissues carried on by David and Gilchrist² and again by Collier and Ransom,³ there seems little justification for this effort. Furthermore, there has been to date no reported series of five to ten year cures of cancer of the rectum with preservation of the anal sphincter which can compare with the results achieved by the Miles operation.

In the light of the extensive and painstaking work of David and Gilchrist, who have studied an average of fifty-five glands per specimen in 200 resections, our routine pathologic studies in most instances seem rather inadequate. They do, however, lend additional evidence to the thesis that the presence or absence of glandular involvement exerts a profound influence on prognosis. It is the best yardstick in determining prognosis. It shows that longevity is in direct proportion to glandular involvement. This, in turn, is entirely dependent on the grade of the growth. In short, the lower the grade of the lesion, the later metastasis will occur. In contrast to this, the higher the grade, the earlier extension will take place. These observations emphasize the fundamental importance of as radical an operation as possible with as widespread a removal of gland-bearing tissue—a basic surgical principle.

The bitter cry against the abdominal anus as pointed out by Pfeiffer⁴ is raised by "those who do not have them and do not need them to remain alive." Again, he observed that "of course, the uncontrollable perineal colostomy is infinitely inferior to the abdominal anus in all respects except sentimental nonsense." With this thesis the great majority of surgeons who have had wide experience in this field are in hearty accord. By contrast one finds a few men in this country and abroad who persist in trying to stem the tide of current thought by expending great effort to maintain the anal sphincter or condone the tragic incapacity of an incompetent perineal colostomy.

The secret of proper adjustment to an abdominal colostomy is the realization that this is the safest and best method of insuring longevity. The surgeon who is a staunch advocate of the combined operation as the best possible means for saving the life of his patient will not belie the confidence of his patient in a faltering dissertation on the pros and cons of an abdominal anus versus perineal colostomy or the doubtful possibility of retaining the use of the anal sphincter. It is this uncertainty that a colostomy is essential which leads to hesitation, dissatisfaction and maladjustment.

We have with persistent interest followed the course of our patients who now wear a colostomy. To each one the necessity of the procedure is carefully explained prior to operation, and thereafter the routine colostomy care is quickly made a part of the patient's responsibility. Firm but patient gentle instruction and kindly encouragement do much to hasten the psychic readjustment of even the highly emotional and unstable patient. We have had no psychoses or suicides which have resulted from the inability to adjust to wearing a colostomy.

CHOICE OF OPERATION

- I. Combined abdominoperineal, one stage, Miles.
- II. Colostomy and perineal resection, Mummery.
- III. Local resection without colostomy, Harrison-Cripps, Quénu, Tuttle, etc.
- IV. Operation preserving the sphincteric mechanism.

I. Combined Abdominoperineal Operation, One Stage.—The operation of choice, we believe, for cancer of the rectum is the Miles combined abdominoperineal resection in one stage. This operation has many advantages:

1. It permits ligation of the blood supply to the rectum before the pelvic dissection is carried out.

2. It permits a widespread removal of gland-bearing tissues in all zones of spread, particularly the upward zone of spread into the mesentery of the sigmoid. It is futile to argue that because there are few recurrences in the downward and lateral zones of spread one may practically ignore them in selecting an operation for cancer of the rectum. Only this year I have seen 2 cases of recurrence in the posterior vaginal wall following the radical combined operation; 1 which was handled by me and the other by a colleague of mine, three and four years ago, respectively. This downward spread is corroborated in a recent article by David and Gilchrist, who reported in their series 7 cases in which the metastatic glands were found below the primary growth, the involved glands being found as much as 5 cm. distal to the margin of the tumor.

It is essential that any operation for cancer which lies in juxtaposition to the levator ani be radical enough to remove the levator ani and the fat and glands in the ischiorectal fossa.

3. Statistical studies up to now have indicated without exception that the Miles operation gives a higher percentage of three and five year cures and of freedom of recurrence than any other type of procedure available.

4. While the operation bears the inconvenience of a colostomy, it should be emphasized that a colostomy is not a stigma but an inconvenience. A colostomy definitely does not entail social ostracism or professional incapacity. It may limit activities, true, but only that.

With the steady improvement in preoperative preparation, in anesthesia and postoperative care, more and more patients, including the elderly, the feeble and the depleted, are being submitted to the radical resection in one stage with a lower mortality and higher curability rate.

II. Colostomy and Posterior Resection (Mummery).—This operation is a useful procedure in certain desiccated, devitalized and depleted patients on whom one hesitates to do the Miles operation. It is a more conservative procedure which does not allow the radical removal of the large portion of mesentery and, in addition, is divided into two stages. Its utility is steadily decreasing and in the past few years only an occasional patient has been submitted to this type of procedure in our service.

III. Local Resection Without Colostomy (Harrison-Cripps, Quénu, Tuttle, etc.). Local resection without colostomy in the form of such procedure as devised by Harrison-Cripps, Quénu, Tuttle and others is useful in a limited group of cases. These operations, however, have a definite place, small though it may be, in the surgeon's armamentarium.

2. David and Gilchrist: Personal communication to the authors.

3. Collier, F. A., and Ransom, H. K.: The One Stage Procedure of the Treatment of Carcinoma of the Rectum, *Tr. Am. S. A.* 54: 163, 1936.

4. Pfeiffer, D. B., in discussion on Hordley, J. S.: Resection of Recto-sigmoid and Upper Rectum for Cancer with End-to-End Union, *Surg., Gynec. & Obst.* 64: 313, 1937.

IV. *Sphincter-Saving Procedures.*—Without personal experience with the "pull through operation" but with a knowledge of the meager literature on long time cures following its employment, I find small opportunity for its consideration at all if the growth is below the peritoneal fold. The difficulty in standardizing a nomenclature for the rectosigmoid juncture leads to confusion, but any sphincter-saving operation for a cancer below the peritoneum certainly is excessively vulnerable. When the cancer is entirely intraperitoneal but low down—say within 2 inches (5.1 cm.) of the peritoneal fold, an anastomosis, open or closed or by David's obstructive method, can be employed in favorable cases with satisfaction. But it is an entirely different consideration when one attempts to anastomose the bowel for a carcinoma within 3 inches (7.6 cm.) of the sphincter muscle.

The technical procedure of sewing together two pieces of bowel low in the pelvis is not a difficult thing for a skilled operator, but it is certainly not a triumph to make an anastomosis and save mesentery which contains involved glands. Sentiment for the sphincter muscle is hardly a logical reason for selecting an operation. The true measure of a procedure is the longevity curve. The recognition that vital organs and mechanisms must be sacrificed in an operation to eradicate cancer is not new. Operations on the breast, jaw, tongue and in many other locations are frequently mutilating procedures, but the necessity of their employment has long since been established. Why should a different principle be applied to cancer of the rectum?

PREOPERATIVE AND POSTOPERATIVE CARE

Among the important strides which have been made in the past two or three decades is the development of a more profound insight into the physiologic reserve of the patient about to be operated on. This feature alone has done more to prevent postoperative complications and to reduce the operative mortality than any other single development including advances in technics. One cannot overemphasize the importance of a careful and thorough preoperative study and preparation of patients with cancer of the large bowel. Too often such a lesion, though subtle and insidious in its development, will cause a slowly progressive but pronounced anemia and protein deficiency. Continuous though small serum loss from the ulcerative lesion not infrequently leads to subclinical hypoproteinemia not always manifested by the serum protein evaluation. Mild to moderate vitamin deficiency is the rule rather than the exception, while dehydration of varying degree is not uncommon.

In order to determine individual requirements and correct existing deficiencies these patients are admitted to the hospital five to six days prior to operation. The routine examinations of blood and urine are made, in addition to which values for blood protein and non-protein nitrogen are determined. Blood protein levels are raised to 6.5 Gm. per hundred cubic centimeters. Nitrogen, caloric and electrolytic balance is established. Transfusions are used to combat the existing anemia. A fluid intake up to between 3,000 and 4,000 cc. is encouraged for each twenty-four hour period, and a high value polyvitamin preparation is given with each meal. Twice daily the bowel is irrigated with copious washings of isotonic solution of sodium chloride until

the returns are clear. The day prior to operation the irrigation is carried out in the morning only and the bowel is put at rest with three doses of camphorated opium tincture, 2 drachms (8 cc.) given at four hour intervals. In the group of patients reported in this series the sulfonamide drugs were not administered preoperatively. They are being used now, as we believe them to be a valuable addition to the preoperative preparation. Immediately after operation a transfusion of 500 cc. of whole blood is given routinely. Thereafter, fluid, nitrogen, electrolytic and vitamin balance is maintained by parenteral administration of fluids, which include dextrose, plasma, isotonic solution of sodium chloride and vitamin concentrates. Penicillin was not available during the time that the reported series was accumulated, but now it is being used routinely for the first five days postoperatively. The colostomy clamp is removed on the second postoperative day, and as soon as healing is sufficient routine colostomy care is begun.

STATISTICAL STUDY OF A SERIES OF CASES

During a period of seven years, from 1934 to 1941, 336 patients suffering with cancer of the rectum and rectosigmoid were studied. Of this group 310 were

TABLE 1.—Operations for Cancer of the Rectum and Rectosigmoid

	Cases	Deaths	Mortality, %
One stage combined abdominoperineal resection	167	9	5.3
Colostomy and posterior resection.....	56	9	16.0
Posterior resection without colostomy	1	0	0
Two stage resection (Rankin).....	9	2	22.2
Exploration alone	19	3	26.3
Exploration with colostomy.....	54	17	31.5
Cecostomy (acute obstruction due to cancer)	4	4	1.0
310 cases, 233 resections.....			Resectability, 75.1%
233 resections, 167 one stage combined abdominoperineal resections			Applicability, 71.7%

subjected to operation, while for 26 it was felt that an operation was contraindicated. Of this entire group, in 167 patients the abdominoperineal resection of the rectum in one stage was performed with a mortality of 5.3 per cent. The two stage combined operation was utilized in 9 cases, while in 56 the colostomy and posterior resection were done. In 19 patients exploration revealed that no further procedure was indicated, whereas exploration and colostomy were done on 54 patients. In 1 patient a local excision was done, and in 4 cecostomy for obstruction.

Of this series of patients 212 were males and 124 females. Fourteen of the men were found to have inoperable cancer in contrast to 16 of the women, while one hundred and ninety-eight and one hundred and eight operations, respectively, were done in the two groups.

Of the entire group of patients 233 were amenable to resection of the lesion, giving a resectability rate of 75.1 per cent. The one stage combined abdominoperineal resection of the rectum was applicable to 167 patients, or 71.7 per cent of the group.

It should be noted that in 73 patients glandular metastasis was found to have already developed, whereas in 89 patients no glandular involvement was found. Of the 73 patients with glandular metastasis

27.3 per cent lived five years or longer while 10.9 per cent were alive and well under five years. In the group of 89 patients who were found to have no glandular involvement, 43.8 per cent survived the five year period while 24.7 per cent were living under five years. Over 61.6 per cent of those patients with glandular involvement died within the first five years following operation, while only 30.3 per cent of those without metastasis to the regional nodes succumbed during this period. The five year survival rate is 52.4 per cent.

MORTALITY

Of the 167 patients subjected to the Miles operation, only 9 patients succumbed, and the operative mortality was 5.3 per cent. There were also 9 deaths following the fifty-six operations of colostomy and posterior resection, a mortality of 31.5 per cent. The higher mortality is, of course, in keeping with what one would expect in making every effort to see what could be done for the depleted patient harboring the far advanced lesion.

patients died of peritonitis and in another the immediate cause of death was not determined at autopsy. The remaining 4 deaths were the result of intestinal obstruction which was a complication of peritonitis in 2 cases and due to adhesion to the pelvic floor in 2. In 1, an omental band adherent to a seam in the pelvic diaphragm constricted the terminal ileum, while in another the terminal ileum was obstructed by a second loop of small bowel which had become adherent at the same place.

Obstruction low in the small bowel in the patient who is receiving only small quantities of fluids by mouth for the first three days postoperatively can be an insidious process, subtle and slow to manifest itself in a form sufficiently clearcut to warrant reoperation. With progress the picture becomes further clouded and increasingly difficult to interpret. Needless to say, it requires intense fortitude to reoperate in the early post-operative days, but certainly this complication must be emphasized because of the frequency with which it has occurred in this series.

TABLE 2.—Pathologic Studies Made on One Hundred and Sixty-Two Patients with Cancer of the Rectum

Grade	Patients	With Glandular Involvement						Without Glandular Involvement						Living 1946
		Total	Living Over Five Years		Living Under Five Years		Total	Living Over Five Years		Living Under Five Years				
			Alive	Dead	Alive	Dead		Alive	Dead	Alive	Dead			
1.....	6	0	0	0	0	0	6	3	0	1	2	4		
2.....	61	15	5	1	2	7	46	19	2	13	12	39		
3.....	51	25	5	0	3	17	26	9	1	8	8	25		
4.....	44	33	8	1	3	21	11	5	0	1	5	17		
Totals.....	162	78	18	2	8	45	89	36	3	23	27	85		
Percentage.....			21.6	2.7	10.0	61.6		40.4	3.3	25.8	30.3	52.4		

Table 3 presents a review of the results of the Miles operation performed on 167 patients for carcinoma of the rectum and rectosigmoid with a yearly follow-up of the survival rate beyond the initial three year period. Here again it is evident that the majority of deaths, 44.5 per cent, occur within the first five years. Therefore, one can hardly view with assurance data accumu-

TABLE 3.—Combined Abdominoperineal Operations, One Stage (Miles)

Number of Operative Cases	Number of Males	Number of Females	Number of Operative Deaths	Hospital Mortality, %	Number of Cases Traced
167	101	66	9	5.3	162
Postoperative Follow-Up			Patients		Percentage
3 to 4 years.....			102		63.0
4 to 5.....			91		56.1
5 to 6.....			58		36.0
6 to 7.....			45		28.0
7 to 8.....			36		22.2
8 to 9.....			23		14.1
9 to 10.....			18		11.1
10 to 11.....			6		4.0
11 to 12.....			2		1.3

lated over shorter periods. Of the 167 patients, in only 5 have we been unable to complete the follow-up to date. At this time 85 patients are alive and without evidence of recurrence. This represents a survival rate of 52.4 per cent.

In this group of 167 combined resections, 2 patients succumbed to vascular accident, 1 to a cerebral thrombosis and another to pulmonary embolism. Two

SUMMARY

Down through the years the procedures devised for the surgical removal of cancer of the rectum and rectosigmoid have been many and varied. Repeated efforts have been made to preserve the sphincter mechanism, and repeatedly they have been discarded because of inadequacy. In recent years there has been an energetic revival of this effort.

To strive for the ultimate in postoperative longevity, an extensive surgical removal of the lesion and all gland-bearing tissues in the three zones of lymphatic spread must be accomplished. With proved retrograde metastasis and extension along the levator and muscle sheaths one cannot condone less adequate efforts.

A review of 336 patients with cancer of the rectum and rectosigmoid had been presented. A resectability rate of 75 per cent is recorded, and in 71.7 per cent of those growths resected the Miles operation was found to be applicable. In 167 patients the one stage combined abdominoperineal resection of the rectum was performed with 9 postoperative deaths, a mortality of 5.3 per cent.

In correlating the pathologic changes noted in the resected specimens with the survival of patients operated on, it is demonstrated that prognosis is in direct ratio to the presence and extent of glandular involvement and that glandular involvement is in direct ratio to the grade of malignancy of the lesion. The best yardstick of prognosis is, then, a careful pathologic study of the grade of the lesion and the extent of glandular involvement by metastatic disease.

The mortality rate of 5.3 per cent following the Miles operation is satisfactory so long as the range of resectability is high—emphasizing again that efforts must be directed more forcefully than ever to earlier diagnosis of this readily diagnosed condition.

ABSTRACT OF DISCUSSION

DR. THOMAS E. JONES, Cleveland: Early in the twenties smaller operations were the vogue because of high mortality in major procedures and the struggle to save the sphincter. More recently there has been a tendency to determine the type of operation according to the grade of lesion and its distance within the anus. An earlier study of 103 consecutive cases at Cleveland Clinic pointed to invasion of mesenteric fat as important. Later venous involvement was found in 72 per cent and glandular involvement in 65 per cent, a significant observation when considering anastomosis. Any section, therefore, through veins in the neighborhood will favor early recurrence. In a recent study 80 per cent of the patients had lesions within 12 cm. of the anus, and in this location I perform the abdominoperineal operation. The smallest lesion was 5.2 cm. in diameter and the largest 71.2 cm. in diameter. Of all the cases glands were involved in 59 per cent and the lymph nodes and mesentery fat in 65 per cent. An abdominal colostomy is an inconvenience, but a patient can be happy and content with one. The surgeon must be forceful but sympathetic, encouraging and understanding in instructing the patient. The patient will then become proud and boastful of his special management. The objection to the one stage abdominoperineal resection has been the mortality. This objection has been removed since the mortality has dropped from 25 to 5 per cent. In spite of the shortage of hospital beds and the necessity of substituting typewritten instruction for preoperative hospital care, I have been gratified to note no effect on the mortality. Lowered mortality has been due to improvements in preoperative treatment and rehabilitation and in anesthesia and to advances in chemotherapy, although I have never used intestinal chemotherapy in preparation for operation on the colon or rectum. Close observation is necessary in early recognition of complications. Elimination of infection has contributed much to the good results. Of 137 consecutive cases without a mortality, in only 3 was there any infection of the abdominal wound. Intestinal obstruction, either mechanical or due to chemical, traumatic or bacterial peritonitis, caused over half the deaths, and requires painstaking postoperative care to lower mortality. In 13 cases of mild obstruction only one enterostomy was performed. Without the early use of the Miller-Abbott tube many of these cases would have gone on to obstruction, which used to cause over half the mortalities.

DR. LELAND S. MCKITTRICK, Boston: There are persons who have little or no incentive to live. To them, life with a colostomy may not be worth while. But most persons have a family; they love life, and they do have a real incentive to live. A colostomy is not too big a price for them to pay for those privileges. Your objective is to do the best cancer operation of which you know. If you do your best in any cancer which is below, at or just above the peritoneal floor you will do, if you can, the combined abdominoperineal operation which has been favored by Dr. Rankin and Dr. Jones. We, too, have patients in the hospital five to seven days before operation. I am sure that our patients would miss something if their preparation were done at home. They come to us as strangers. Those five to seven days give us an opportunity to come to know each patient and his problems, and the patient comes to know us. We never discuss the colostomy until the night before the operation. Then we sit down and have a careful and thorough talk of the whole problem. They know that we are doing what we can to help them. Patients understand their problem better, and the acceptance of a colostomy under these circumstances is not too difficult for the patients. When you or I have done a colostomy on a patient, it is our obligation to see the patient through the period of rehabilitation, not only

in the immediate postoperative period but from time to time during the years to come. This has two objectives: It is our obligation to that patient, and also it is our obligation to future patients, because only by seeing these patients, understanding them, talking with them, knowing them, can we have the conviction that we must have if we are to be able to sit down and honestly tell patients that the best chance of cure of their disease means the loss of their rectum; that means a permanent colostomy, and a colostomy is completely compatible with a useful and happy life.

DR. FRANK H. LAHEY, Boston: I do not want to join forces with every effort to overcome all compromises to a radical approach to cancer of the rectum. I feel that we have one chance to cure a cancer of the rectum, and that is the first one, and that there will be no opportunity to change one's mind. It is unfortunate that our estimate of colostomy is based largely—and particularly the public's estimate—on knowledge of and experience with the palliative colostomy, about which patients are inevitably vocal, because they suffer so. It is psychologically unfortunate that the persons who have a good working colostomy are secretive about it, generally, and do not boast about it, as would be a good thing if it could be accomplished. I wish to leave this, because the speaker, Dr. Rankin, and the discussers have so ably defended what I believe in, and that is that a trade for the preservation of the sphincter will in ten years be offset by a decrease in the five year nonrecurrence rates. Dr. Swinton in the Clinic has followed 1,800 autopsies with respect to polyps, and in that connection I want to point out two things: One is the avoidable abdominal resections in some of the polyps in which the microscopic diagnosis is carcinoma. We must bear in mind that in 4 per cent of these cases in which autopsies were done there were polyps and in 42 per cent the polyps were multiple. Also, remember that 25 per cent of the patients who have carcinoma have associated polyps, and it is so easy, when we make a diagnosis of carcinoma of the rectum, not to go further and determine at that time whether or not the patients have an additional polyp which could be taken care of at that time or at least recognized and watched. The important thing I want to bring to you is this—and this is dangerous to say—that there is a type of polyp in which the malignancy as reported by the pathologist is entirely within the polyp, does not involve the base, does not spread onto the mucosa, and I know of some of these that are being resected that in our experience probably do not need to be. We have removed twenty-two polyps in which this pathologic report has been given (and I want to be careful to add this) in which there was no spread over the base, no ulceration and the malignancy was limited to the body of the polyp. These have been followed over a series of years, and there have been no recurrences. The polyps with the malignancy within the body of the polyp and not involving the base we believe can be folgerized and watched, and most of these will not require abdominal sequel. I believe that Dr. Rankin and the discussers have really done us a service by imposing limitation of the operation by preservation of the sphincter, which has been so widely publicized. It is unfortunate that it is easy to persuade patients to choose this operation, but they do not know the price that they may pay.

His Father Was a Minister.—Oliver Wendell Holmes was born in Cambridge, Mass., in 1809. He received his medical degree from Harvard in 1836 and began to practice in Boston. Although Holmes never acquired a large practice he was elected one of the physicians to the Massachusetts General Hospital, and in 1847 was appointed professor of anatomy and physiology at Harvard. His most lasting contribution to medicine is his essay on "The Contagiousness of Puerperal Fever," published in 1843, which in the words of William Osler, "probably saved many more lives than any individual gynecologist." Other works contributing to his literary fame are the "Autocrat of the Breakfast Table," and his novels, notable for their psychological insight, of which "Elsie Venner" is probably the best known. As the son of a New England minister, it is not surprising to find Holmes occupied with problems of theology.—Rosen, George, and Caspari-Rosen, Beate: 400 Years of a Doctor's Life, New York, Schuman's, 1947.

ASPIRATION BIOPSY IN DIAGNOSIS OF LESIONS OF VERTEBRAL BODIES

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It is the purpose of this paper to point out the technic, indications and end results obtained with aspiration biopsy of the vertebral bodies.

We think that the application of aspiration biopsy in the lesions of the spine is of great interest, because the vertebral bodies cannot be surgically approached in order to diagnose.

Reviewing the literature, we found only one mention of this method of diagnosis, in Robertson and Ball's paper.¹ These authors stated that since 1932 they had applied this method in 15 patients with various diseases of the spine; in 6 of these cases the diagnosis of malign-

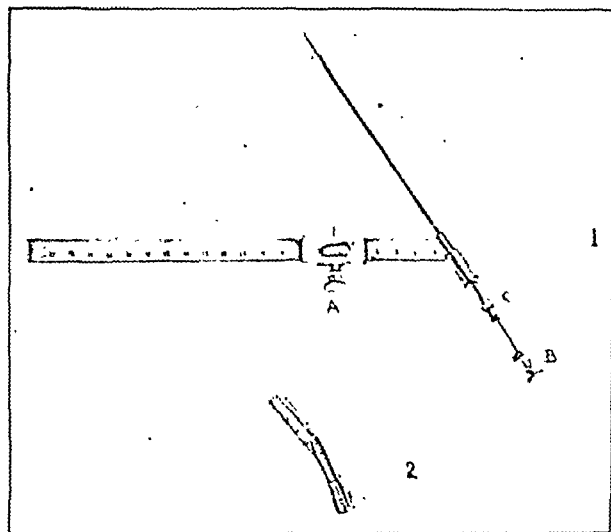


Fig. 1.—Apparatus used in aspiration biopsy. (1) A, sharp point employed to fix the instrument. B, exploring needle. C, aspiration needle. (2) Showing device for disconnecting the guide from the needle.

nant tumor could be made. They summarized the clinical reports for 6 patients: a myeloma of the twelfth dorsal vertebra; Pott's disease primarily localized in the eighth dorsal vertebra, with invasion of the neighboring vertebrae; osteomyelitis of the sixth dorsal vertebra; a case of typhoid spondylitis of the third and fourth lumbar vertebrae; metastases in the sixth cervical vertebra and a process of infectious nature of the fourth and fifth lumbar vertebrae. The authors stated that the procedure is blind and that therefore it is difficult to control exactly the location of the needle. In their paper they did not describe their technic.

To introduce a needle into a vertebral body is a procedure of some risk when the technic is not exact to the detail.

We wish to convey some considerations to justify our opinion that not all the vertebral segments are suitable for puncture.

PARTS OF SPINE SUITABLE FOR PUNCTURE

Cervical Part of Spine.—The anterior arch of the atlas, the body of the axis and the third cervical vertebra are hardly accessible to palpation. Since they are deeply placed in connection with the organs of the neck, it is advisable to find them by the pharyngeal route. The fourth, fifth, sixth and seventh cervical vertebrae are accessible laterally. We will explain the technic later. This portion of the spine is highly accessible to palpation.

Dorsal Part of the Spine.—The bodies of the dorsal vertebrae are in intimate contact with the parietal pleuras, with the descending aorta and accompanying vein, the esophagus, the thoracic duct, etc. It is easy to understand that in an attempt to reach a dorsal vertebral body with a needle, in the superior part, the large arterial and venous trunks could be injured. Our experiences in cadavers causes us to advise against vertebral puncture above the ninth dorsal vertebra.

Lumbar Part of Spine.—The three last dorsal vertebrae and the lumbar vertebrae are highly accessible to aspiration puncture. The pillars of the diaphragm and the insertions of the ileopsoas contribute to form a muscular layer that isolates the lateral part of the vertebral bodies from the neighboring organs. The aorta is placed over the anterior part and slightly left of the vertebral bodies, the inferior vena cava over the anterior right part of the same bodies, advancing a little more laterally than the aorta. The distance from the skin to the mentioned vessels varies between 9 and 10 cm.

The kidneys, placed in the lateral regions, are connected with the spine from the eleventh dorsal to the third lumbar vertebra. It should be pointed out that in accordance with our measurements the distance from the surface of the skin to the renal pedicle varies between 8 and 9 cm.

TECHNIC

We shall describe the instruments and the technic of aspiration biopsy. We must distinguish the puncture of the bodies of the three last dorsal vertebrae and of the lumbar vertebrae from the puncture of the four last cervical vertebrae.

Tenth, Eleventh and Twelfth Dorsal Vertebrae and Lumbar Spine.—Instruments: We employ two needles: one thin and long, the exploring needle, which is used as a stilet, and the other thicker and shorter with which the aspiration is performed, and a guide of direction (fig. 1). The exploring needle must be 18 cm. in length and with a diameter of 1 mm., with the characteristics of the needles commonly used in lumbar punctures, though longer (fig. 1). The second needle is the one which we usually employ for aspiration biopsy, but this needle is marked on its external face. These marks begin at 6 cm. from the sharp point and show the penetration in divisions of 1 cm. up to the tenth centimeter. To give the needle an exact direction we employ a guide that is formed by a metallic ruler divided in centimeters; over this ruler slide a sharp point which is employed to fix the instrument on the middle line. At one of the ends the guide ruler has a channel 2.5 cm. in length, placed at an angle of 125 degrees. The needle will go through this channel when aspirating. A simple device allows us to disconnect the guide from the needle when this is placed in a correct position. Figure 1 shows the device and the needles placed in the guide.

Technic: The patient is placed on an x-ray table, lying on his face. The roentgenographic examination is absolutely necessary to determine the position of the needle accurately. An anesthetic wheal on the middle line over the spinous process is made with a solution of 0.5 per cent procaine hydrochloride.

Address of the invited foreign guest read before the Section on Orthopedic Surgery at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

1. Robertson, R. C., and Ball, R. P.: Destructive Spine Lesions: Diagnosis by Needle Biopsy, *J. Bone & Joint Surg.* 17:749-758 (July) 1935.

The puncture must take place 6.5 cm. from the midline, preferably to the right side to avoid the inferior vena cava. According to our studies in several sections made at different levels of the spine, the distance of 6.5 cm. from the midline can be considered constant, since in all the cases it has been demonstrated that it is the most suitable spot for the introduction of the needle. When the spot where the needle is going to be introduced is chosen, a superficial and deep infiltration of the



Fig. 2.—Showing guide in place.

same anesthetic solution is made, and then with the sharp end of a tenotome a preliminary puncture of the skin is made in order to avoid introduction of the skin into the needle.

The guide is placed (fig. 2); the channel which is on the other end will give the exact angle, that is 35 degrees. It is important to insist on this point. Figure 3 shows the guide in place with the needle touching the vertebral body. According to our investigations, insertion of the needle at this angle 6 or 7 cm. deep, circumventing the transverse process, brings it to the vertebral body. With an inclination of 45 degrees to 50 degrees, the needle might enter the intervertebral foramen; as the course of the needle is oblique, it must go in diagonally and reach the lateral part of the dura without any risk of damaging the cord. Only the roots can be punctured, and in this case the patient complains of radicular pain, which indicates that the direction must be correct. If the angle of penetration is decreased when the needle is about 7 cm. beneath the skin, it does not strike bone. If it went deeper, the renal pedicle could be touched; it is 8 or 9 cm. from the skin at the level of the second lumbar vertebra.

The aorta is almost impossible to reach because it is very anterior, approximately 9 to 10 cm. from the skin; since the inferior vena cava extends somewhat to the right of the vertebral body, its puncture, though remote, may be possible if the needle goes in more than 9 cm. and in a direction closely perpendicular to the skin; this is a gross error of technic.

The thin needle is placed inside the other, and the exploring puncture is performed with the thin needle, which, being longer, extends beyond the thicker needle (fig. 1). The latter at the beginning only penetrates into the posterior soft parts. The puncture is performed without mandrel. The needle is attached to a syringe to allow the aspiration as the needle is going in. Whether it has reached some vessel or the rachidian channel must be determined. When the guide needle reaches the vertebral body, the mandrel is introduced to make sure that nothing has clogged the needle. It is at this moment that antero-posterior and lateral roentgenograms are taken. When it has been determined by the roentgenograms that the needle is placed in the suitable spot, the thick needle is pushed in; when it touches the vertebral body, the thinner needle and the guide are withdrawn. If the vertebral body is soft, one sees how the needle penetrates it, and the aspiration is performed and the vacuum maintained while the point of the needle is moved backward and forward. If on reaching the body there is some

difficulty in penetrating it, one may, without losing contact with the body, slide the needle 1 or 2 cm. and may find a softer zone. If one acts like this and maintains contact with the bone obstacle, there is no danger of injuring any important organ. Before performing the aspiration it is convenient to pass the mandrel through the thick needle to avoid the clogging of this needle.

We think that the insertion of the thin guide needle is the best precautionary measure. Any organ reached by the thin needle would not suffer any important damage. In case the rachidian channel or a vessel is reached, the issuing of blood or cephalorachidian fluid would show this and would permit change of direction of the puncture. This did not happen in any of our cases.

Alberto Gutierrez² in describing in detail the technic of the anesthesia of the lumbar sympathetic according to Kappis, pointed out the possibility of puncturing the aorta or the inferior vena cava; this fact has not brought any inconvenience. His opinion was shared by other authors.

Once the aspiration is performed, the needle is attached to the syringe and is withdrawn. The material obtained is emptied into a test tube with saline solution to be examined afterward.

The puncture may also be performed without the guide and the aforementioned technic, but in this case experience is required to give the needle the exact direction. Since the technic which we have described is not difficult, we think it an advisable course to follow.

Cervical Part of Spine.—As we have said, the biopsy is performed in the last four cervical vertebrae

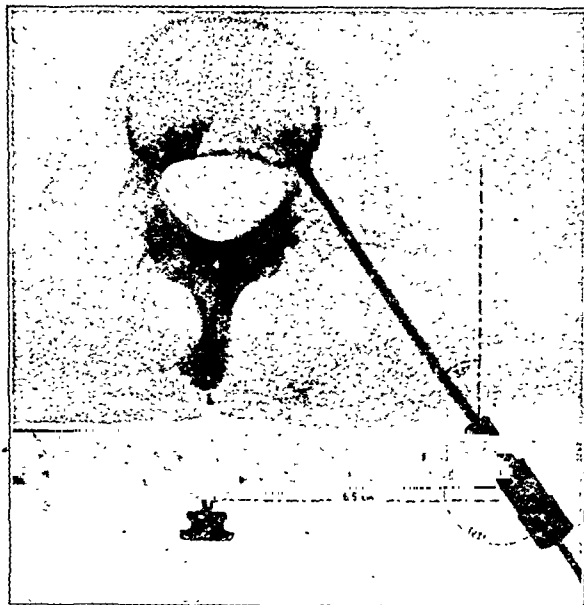


Fig. 3.—Showing guide in place with the needle touching the vertebral body in lumbar part of spine.

for diagnosis. The bodies of the first three vertebrae are easily found by the pharyngeal path. Moreover, it has been observed that the last four cervical vertebrae are the vertebrae of this region most frequently hurt.

Since the vertebral bodies are smaller than in the dorsal and lumbar regions, we do not think it suitable

2. Gutierrez, A.: Anestesia esplénica; algunas consideraciones sobre ella: contribución personal, *Semana méd.* 2: 1-17, 1922.

to reach them posteriorly. We therefore recommend the puncture laterally.

The outjutting course must be followed as a guide. As the arteries and nerves of the neck are covered by this muscle in its superior part, one never must go through it, but remain on the posterior border.

When the muscle goes downward and forward toward its inferior insertion, the artery and nerve that go down vertically extend past the posterior border of the muscle in the base of the neck; for this reason we advise that the puncture not be made in front of the vertical descending from the posterior border of the mastoid.

The cervical and brachial plexus may be reached by the needle without any inconvenience other than the pain which the patient feels.

The esophagus may only be reached if the needle goes in very deeply.

The vessel that may be reached more easily during the puncture is the vertebral artery, which, after coming out from the subclavian artery, goes upward toward the hole in the base of the transverse apophysis of

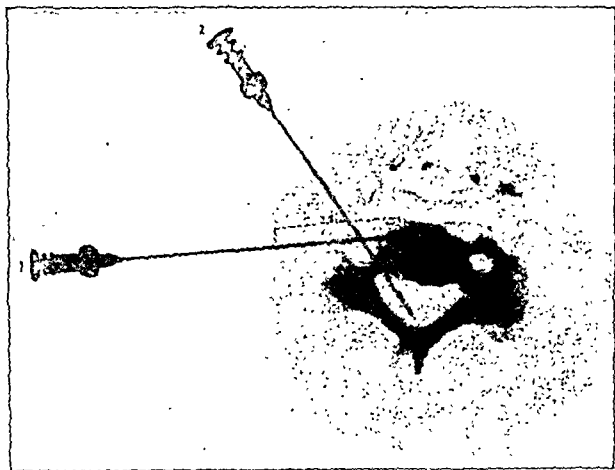


Fig. 4.—Showing positions of needles in aspiration in cervical portion of spine. Needle 1 is inserted in the right position.

the sixth cervical vertebra; as the artery goes along the channel that is in the remaining apophyses of the cervical vertebrae and these apophyses have a disproportionate size in relation to the bodies—the needle when directed toward the body may easily reach the vertebral artery; nevertheless, we cannot verify this accident in any of our cases.

Lambret, Razemon and Decoulx, who in 1939 published a monograph on surgery of the sympathetic and its infiltrations,³ made an analytic study, very precise, of the different technics to reach the neurovegetative system. On describing the different ways in which the stellar ganglion can be infiltrated, they mentioned the organs that may be reached by the needle in its course, and they added that the injury of the vessels that “a priori” may appear of great importance is not so in practice, and in general the vessels remain free of danger. According to these authors, this is shown in their numerous personal cases and the great number of infiltrations of the stellar ganglion that have been performed without complications.

3. Lambret, O.; Razemon, P., and Decoulx, P.: *Technique de la chirurgie du sympathique et de ses infiltrations*, Paris, Gaston Doin & Cie, 1939.

The penetration of the needle into the rachidian channel is impossible because the intervertebral foramina have an oblique direction from the inside to the outside and from the back to the front, and as the needle goes in a direction from outside to inside and from back to front, it is easy to understand that to go into the channel is nearly impossible, as can be seen in roentgenograms of the section going through the fifth cervical vertebra. To enter into the channel the needle must go from the front to the back, going through the sternomastoid muscle; the muscle, as has been said, must always be in front of the needle when the puncture is correct.

Technic: Once the lesion is located, the patient is placed in lateral decubitus. The posterior border of the sternomastoid is palpated and the vertical is drawn from the posterior border of the mastoid; a dermic welt is made with procaine hydrochloride. A superficial incision is made with a tenotome and the puncture is performed with the same needle. The first needle must be attached to a syringe to aspirate (puncture of a vessel). The direction of the needle must be from outside to inside and slightly from the back to the front, about 3.5 cm. It must reach the bone. If blood is aspirated, the needle must be carried a little more to the front to escape the obstacle offered by the transverse processes (fig. 4).

When the vertebral bodies are reached, anteroposterior and lateral roentgenograms are taken; if the place of the needle is accurate, the thick needle is pushed forward, the thin needle is withdrawn and aspiration is performed in the usual manner.

We applied the puncture to diagnosis in 86 cases of lesions of the spinal column. The localizations were as follows:

	Cases
Cervical part of spine.....	9
Dorsal part of spine.....	18
Lumbar part of spine.....	46
Not known.....	13
	86

The types of lesion in 68 of these 86 cases are as follows:

	Cases
Metastatic carcinoma.....	32
Myeloma.....	9
Angioma.....	1
Tuberculosis.....	12
Unspecific inflammatory processes.....	8
Echinococcosis.....	2
Osteoporosis and others.....	4
	68

In order to appreciate the results, we made the following classifications:

Positive: Cases in which it was possible to determine accurately the nature of the lesion (59 cases).

Satisfactory: Cases in which the study of aspirated material permitted establishment of adequate therapy but not of the classification of the lesion (10 cases).

Negative: Cases in which, on account of the lack of material, the diagnosis could not be done (6 cases).

Doubtful: Cases in which the diagnosis could not be made because of lack of information (11 cases).

In several cases the puncture was repeated once or twice without serious accident.

With material aspirated, smears were made and sections performed. The microscopic study of the slides obtained with both methods gave us satisfactory results.

The following cases are reported to demonstrate the value of this method of diagnosis.

REPORT OF CASES

CASE 1.—The disease was metastasis of Malpighi's epithelioma to the third lumbar vertebra. The patient, A. A., aged 48, was admitted to the hospital Aug. 3, 1939.

History.—When he was 19 years old the patient got a syphilitic primary lesion; he had local treatment and was cured after fifteen days. There were no secondary phenomena. Gonorrhea at the age of 20 was cured after a month. When he was 47 years old he had pulmonary congestion followed by a sero-fibrinous pleurisy; a month afterward it turned purulent. He was operated on and a fistula remained that discharged periodically. The illness in question began three months later with pain in the sacrolumbar part of the spine, extending to the right lower limb. The patient was unable to walk and had to remain in bed. He was given intravenous injections of iodine and salicylate, local heat and three injections of mercury and vitamin B. The right lower limb improved; the pain was located in the lumbar vertebrae. There remained a certain degree of paralysis and muscular atrophy of the right lower limb. At the same time the pleural sinus began to discharge.

Dorsal Decubitus.—The patient moved with difficulty. Hypotrophy and hypotonia of the muscles were noted, mainly of the lower limbs. There was scoliosis to the left. Pain was elicited between the third and fourth lumbar vertebrae. Active and passive movements were possible.

Thorax: An operative scar was observed over the last rib on the left. There was a spot from which reddish pus exuded.

The right lung seemed normal except for rude respiration. In the left lung there was solidity in the lower third; vocal

infiltration. After the examination of the gross specimen the surgeon thought it a neoplastic degeneration of the ulcer.

The present illness started with pain in the sacral region extending to the sacroiliac joint and right hip. The pain

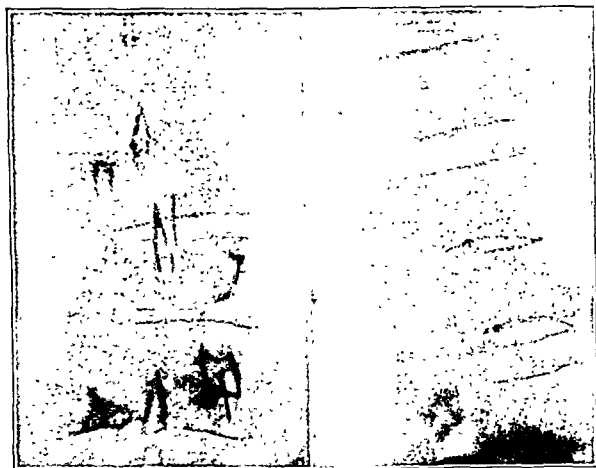


Fig. 5.—Roentgenograms showing destructive process involving three-fourths of the body of the third lumbar vertebra.

vibrations were diminished. There was little entrance of air in the base. In the upper two thirds there was some rhonchus and rude respiration, almost blowing. There was aphonic pectoriloquy in the lower third. In the lower limbs there were pronounced hypotonia, paresis and abolition of reflexes. In the sacrum region a cutaneous sore was observed. Roentgenograms (fig. 5) showed a destructive process involving three-fourths of the body of the third lumbar vertebra. Aspiration puncture was performed.

Pathologic Examination (fig. 6): The tissue obtained in the puncture showed abundant neoplastic tissue of the type of Malpighi's epithelioma. The patient died Oct. 22, 1939.

We think that the presentation of this case is highly interesting because the antecedents of the patient were not sufficiently clear to indicate clinically the existence of a process of a neoplastic nature in the spine.

CASE 2.—The disease was metastasis of a gastric carcinoma into the fourth lumbar vertebra. The patient had undergone a gastrotomy four years previously with the diagnosis of ulcer, a diagnosis that was corrected after the vertebral aspiration biopsy. The patient, aged 40, was admitted May 22, 1939.

History.—When he was 36 years old the patient was operated on for gastric ulcer. The pathologic diagnosis of that lesion was chronic ulcer, pronounced chronic gastritis and extensive

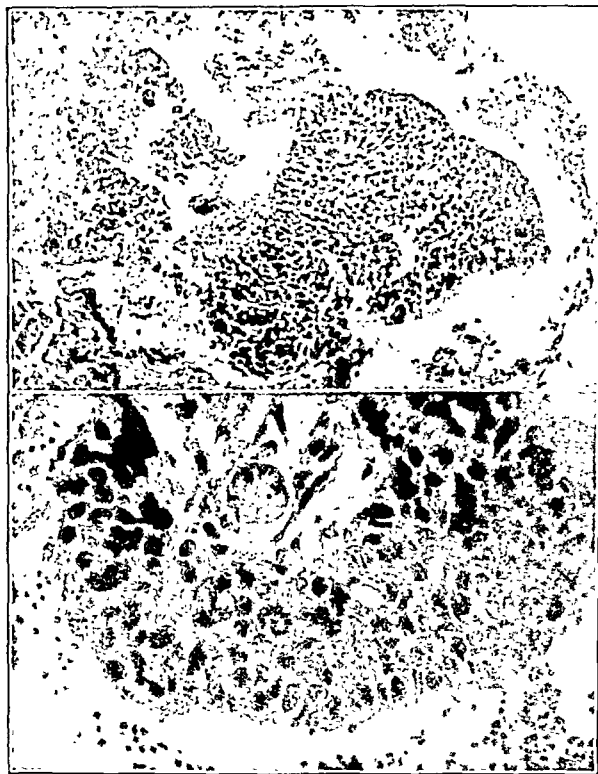


Fig. 6.—Photomicrograph of metastasis of Malpighi's epithelioma.

increased in severity and was still worse on walking. He stopped work twenty days before admission and remained in bed four days. There was no fever. At the time of examination he felt pain in the lumbar spine, sacral region and right

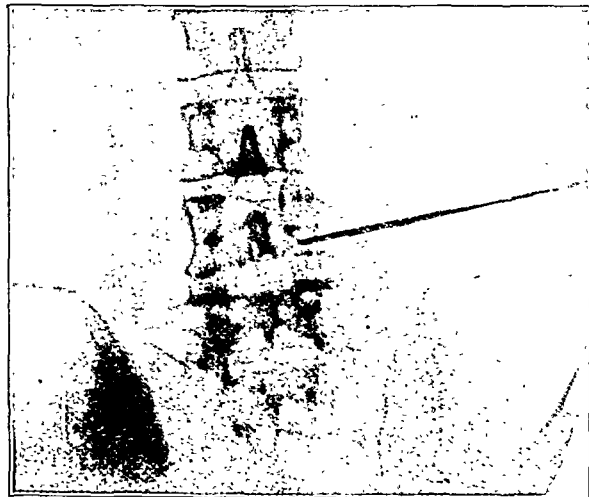


Fig. 7.—Showing lateral destructive lesion of the body of the fourth lumbar vertebra, with flattening of the body and preservation of the intervertebral disk.

hip. He walked with slow steps. After the illness began he noticed that the movements of the spine were limited. Examination revealed rigidity of the lumbar portion of the spine, with pain on percussion of the fourth lumbar vertebra.

Roentgenograms (fig. 7) revealed a lateral destructive lesion of the body of the fourth lumbar vertebra with flattening of the body and preservation of the intervertebral disk. On June 30 aspiration biopsy of the fourth lumbar vertebra was done.

Pathologic Report.—In the specimens examined it was clearly seen that the tumor mass was formed by epitheliomatous cells, cubic and polygonal ones, with evident tendency to mucoid secretion and formation of *Ringszellen* (fig. 8).



Fig. 8.—Photomicrograph of tumor mass showing cubic and polygonal epitheliomatous cells, with tendency toward formation of *Ringszellen*.

Diagnosis.—The diagnosis was metastasis of epithelioma with mucoid secretion of gastrointestinal origin (stomach). According to this report the histologic slides were checked again and our diagnosis was confirmed.

Treatment and Course.—July 18, 1939 a plaster jacket was applied, with traction on both legs. Roentgenograms of the left hip taken July 9 revealed further metastasis. On September 5, at the family's request, the patient was sent back home, where he died on arrival.

Not only is this case highly demonstrative of the certainty of the aspiration biopsy, but also as a result of the aspiration biopsy a diagnosis suspected by the surgeon when the gastrectomy was performed was confirmed.

CASE 3.—The disease was metastasis of Malpighi's epithelioma in a patient with pulmonary tuberculosis. The patient, C. C., aged 58, was admitted to the hospital on Feb. 14, 1940.

History.—In 1893 he had some hemoptysis. Treatment was rendered and he recovered.

Present Illness.—At the beginning of July 1939, he noted hemoptysis. Twenty days later, while lying in bed, he felt a sudden pain in the right scapula that became severer on palpation; then pain gradually extended to the arm and forearm.

The patient referred the pain to the bones of these parts. Pain grew with time and became severer during the night. At admission pain was continuous. He also felt pain in the right side up to the anterior region of the neck. At the same time he began to feel anorexia. He had lost 10 pounds (4.5 Kg.) since the beginning of the illness.

The analyses of sputum performed were positive for the Koch bacillus. At the beginning in the roentgenograms there were atelectatic shadows in the base of the left lung and in both

lungs there were calcified nodules. The pain in the arm persisted; therefore roentgenograms of the dorsolumbar portion of the spine were taken.

At the level of the sixth cervical vertebra a large area of destruction of the body and the transverse processes was found. It was immediately thought that it was a neoplastic metastasis. The possibility of a primary carcinoma of the stomach was investigated to allow confirmation. As the patient presented dysuria for two months a urologist was consulted who found a hypertrophic prostate. He did not find signs of neoplasm of the prostate. According to the process, one thought of a neoplasm of the lung. The patient had vomited without effort. The liquid vomit preceded by nausea had disappeared.

Physical Examination.—The patient was in fair condition. In bed he lay with his head motionless, bending it to the right side. Contracture of the right sternomastoid muscle, bending of the head to the right side, antalgic rigidity, pain and contracture of the cervical spine and pain stretching to the left shoulder and arm were noted. Presternal and parasternal swelling was observed on the level of the fifth, sixth and seventh cervical vertebrae.

A roentgenogram of the lungs on Feb. 17, 1940 revealed diffuse infiltration of irregular borders, veiled, that occupied all the base of the left lung. There were some cavities in the vertex of the same side. A roentgenogram of the cervical part of the spine revealed a destructive process of the body of the sixth cervical vertebra, flattening of this body and reduction of the height of the disks. Aspiration biopsy of the sixth cervical vertebra was done.

Pathologic Report (Frotis).—Small cellular groups were observed, formed by two or more polyhedral cells of epithelial aspects with large and clear nuclei, showing atypia, abnormalities and great nucleoli.

Conclusion: Carcinomatous cords and alveoli of Malpighi cell type were observed with definitely atypical cells and numerous abnormalities.



Fig. 9.—Showing destructive lesion of the twelfth dorsal vertebra and first lumbar vertebra with preservation of the intervertebral disk.

Diagnosis: The diagnosis was metastasis of Malpighi's epithelioma.

Guinea Pig Inoculation.—A guinea pig inoculation was negative.

Treatment and Course.—The cervical portion of the spine was immobilized and roentgen therapy was given. The patient died in September.

CASE 4.—The disease was myeloma of the fourth cervical vertebra. V. M., aged 61, was admitted to the hospital Aug. 17, 1940.

History.—One year previously limitation of motion of the cervical portion of the spine, especially in the movement of flexoextension, was noted. After twenty days the limitation was greater, and as he was leaving the physician's house he fainted and fell, knocking his left shoulder against the floor.



Fig. 10.—Showing chronic inflammatory tissue with zones of necrosis and tubercles formed by epithelial cells, lymphocytes and giant cells of Langhans type.

Immediately the pain increased at the level of the nape and ability to move the cervical part of the spine disappeared completely. He remained in bed some days but he could not sleep. After three months, the pain diminished and the ability to move the cervical portion of the spine reappeared. Four months before admission pain recurred suddenly, showing the same signs. For two months before admission the cervical part of the spine had been bending, and when he entered the hospital his chin touched the sternum in permanent posture.

Condition at Time of Admission.—The cervical portion of the spine was in hyperflexion, the jaw being in contact with the sternum. There was slight cervical scoliosis to the right with contracture of the posterior muscles of the neck. Pain was felt on percussion on the spinous process. Movements were absent. There was a destructive process of the fourth cervical vertebra; subluxation in flexion was almost total.

On August 30 aspiration biopsy of the fourth cervical vertebra was done.

Pathologic Report.—Smear: Numerous round cells with the aspect of plasma cells were observed.

Conclusion: It was concluded that there was a tumor mass uniformly constituted of round cells of the plasma cell type, many of them atypical or with two nuclei.

Diagnosis: The diagnosis was plasmocytic myeloma.

CASE 5.—The disease was tuberculous spondylitis of multiple foci, seeming a metastatic tumor. The patient, H. R. C., aged 32, stated that when he was 20 years old he had a suppurative process of the sternum. There were large scars. This process was of an acute beginning, with fever and the forma-

tion of an abscess. It was cured in two months; at the same time he presented pain and rigidity of the nape. In November 1939 pain of little intensity appeared in the lumbar region; pain increased when he coughed and sneezed. A month later pain increased. A physician diagnosed appendicitis, and he was operated on. On leaving the bed he was well for a week, but the pain appeared after that time. The pain radiated to the right hip, thigh and knee. Rest mitigated the symptoms. Roentgen therapy and heat were employed without results.

A new physician took a roentgenogram of the lumbar part of the spine, and according to it a plaster jacket was made. Pain was immediately relieved. The temperature went as high as 38 C. (100.4 F.). The general aspect was good. When he was examined for the first time he had the plaster jacket on, so that satisfactory examination of his spine could not be made.

A roentgenogram (fig. 9) showed a destructive lesion of the sixth and twelfth dorsal vertebrae and of the first lumbar vertebra. The vertebral bodies were uniformly flattened; the intervertebral disks were normal. These lesions led one to think that they were of a malignant nature. The Wassermann reaction was positive. The sedimentation rate was 60 in the first hour and 120 in the second hour.

Aspiration biopsy of the first lumbar vertebra showed chronic inflammatory tissue, with zones of necrosis and tubercles that were formed by epithelial cells, lymphocytes and some giant cells of the Langhans type (fig. 10).

Guinea pig inoculation was negative. It must be pointed out that the material injected was very scarce.

The diagnosis was tuberculosis.

The patient was seen several times later. He goes on resting in bed and in the plaster jacket. The general status is excellent and there is no pain.

We think that this case is of great interest because it was difficult to confirm a clinical diagnosis. At the beginning we thought more of a lesion of spondylitis, remembering the process that appeared when the patient was 20 years old, and we also thought of the possibility of a tumor.

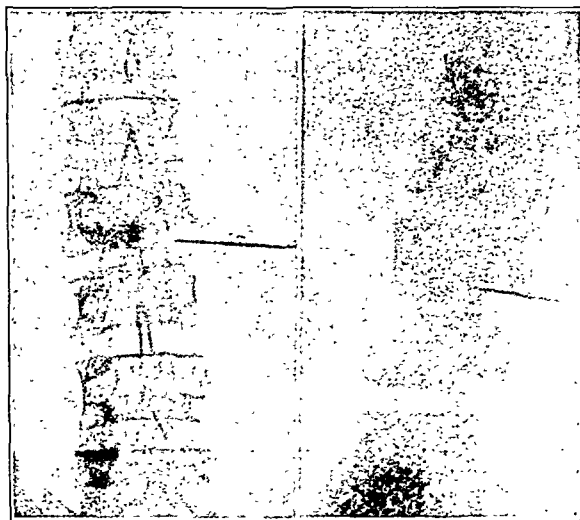


Fig. 11.—Destructive lesion of inferior third of body of second lumbar vertebra.

The aspiration biopsy allowed us to discard this diagnosis, because the tissue obtained was of purely inflammatory nature and with the characteristics of the lesions of tuberculosis. At any rate, it was an atypical case in which the biopsy was highly useful. The slides of that case were observed by Professor Ewing, who confirmed our diagnosis.

CASE 6.—J. C., aged 18, was admitted to the hospital on July 16, 1941.

Illness at Time of Admission.—The onset of his illness was three months previously, with pain in the left side of the lumbar region. In erect position or in bed he did not feel any pain. His general condition on admission was good. It was possible to observe, on examination, a slight protrusion of the second lumbar vertebra and mild dorsal scoliosis. He complained of pain at the second and third lumbar vertebrae. There was full range of motion of the spine.

Roentgenograms.—Roentgenograms (fig. 11) revealed at the level of the second lumbar vertebra a destructive lesion with formation of osteophytes in its upper part. There was slight sclerosis of the second vertebral body; the intervertebral disk was slightly narrowed. A lateral view (fig. 11) showed a destructive lesion of the inferior third of the vertebral body with neoformation at the anterior margin.

Aspiration Biopsy.—Microscopic examination revealed striated muscular fibers and necrotic tissue with lymphocytes and cells of the fibroblastic or epithelioid type.

The diagnosis was tuberculosis.

Bacteriologic examinations were negative. The guinea pig inoculation was positive for tuberculosis.

HUMAN BRUCELLOSIS

Its Specific Treatment with a Combination of Streptomycin and Sulfadiazine

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Although brucellosis was one of the first infectious diseases for which Koch's postulates were established, specific therapy for this disease has remained in an unsatisfactory state. In 1936, Carpenter and Boak¹ reviewed the therapeutic methods which had been used up to that time for human brucellosis and concluded that "a successful method for the treatment of brucellosis still awaits development." Fortunately, this timely survey of therapy by these authors appeared just before sulfanilamide was introduced for the treatment of bacterial infections. In the decade that has elapsed since sulfanilamide became available, other sulfonamide compounds and the antibiotics have appeared. This report embraces a series of experimental and clinical investigations on the specific therapy of brucellosis that have been carried out during the past ten years in the laboratories and clinics of the University of Minnesota Hospitals, and the results indicate that there is a more satisfactory approach to the treatment of human brucellosis.

EXPERIMENTAL EVALUATION OF THE SULFONAMIDE DRUGS AND ANTIBIOTICS AS ANTI-BRUCELLA AGENTS

The fundamental requisite of successful therapy for human brucellosis is that treatment should not only control the infection but that *Brucella* should be eradicated from the tissues.

This therapeutic principle has been the basis for seeking out a more satisfactory form of specific therapy in this clinic. It became apparent during the course of the present investigations that an experimental method was needed which would permit the rapid screening of the sulfonamide compounds and the antibiotics as potential therapeutic agents for human brucellosis. Furthermore, the evaluation of any given drug should be based not only on the degree of protection against infection afforded by the agent, but also on the ability of the drug to eliminate *Brucella* from the tissues and body fluids. While it was known that small animals such as mice and guinea pigs could be successfully infected with *Brucella* and the protective action of drugs could be evaluated by treating these animals, such procedures are time consuming and relatively expensive. Since Goodpasture and Anderson² had shown that the tissues of chick embryos could be infected with *Brucella*, it appeared that a similar technic could be applied to testing the antibrucella properties of the sulfonamide compounds and the antibiotics. After many attempts and the utilization of several thousand fertilized chicken eggs, a simple and rapid method for obtaining reproducible data has been worked out. While this work was in progress, Jones, Metzger, Schatz and Waksman³ reported that chick embryos infected with *Brucella* could be protected with streptomycin. Because the results with infected chick embryos parallel the results obtained in human patients, the experimental method will be summarized briefly. A more detailed description will be given elsewhere.⁴

Fertilized eggs from the same source were used. Seven day chick embryos were inoculated via the yolk sac with a twenty-four hour broth culture of *Brucella abortus* recently isolated from a human patient. Uniformly lethal infections were established in the infected embryos, so that 50 per cent were dead within six days after infection and 100 per cent within nine days. Viable *Brucella* organisms were consistently cultured from the livers of these infected embryos. Twenty-four to seventy-two hours after *Brucella* cells had been inoculated into the yolk sac, the therapeutic agent to be evaluated was injected into the sac. In this manner, sulfanilamide, sulfapyridine, sulfathiazole, sulfadiazine and sulfamerazine were evaluated. Particular attention was given to sulfadiazine, since this drug was being used in the treatment of human patients. Although all the sulfonamide compounds tested prolonged the survival rate of infected embryos as compared with non-treated infected controls, the treatment failed to eradicate viable *Brucella* organisms from the tissues of the majority of the embryos. Since penicillin afforded little or no protection, more extensive observations were made with streptomycin. The latter yielded results similar to those obtained with sulfadiazine; that is, treatment of the embryos prolonged life, but the majority of sacrificed embryos harbored viable *Brucella* organisms. Of considerable significance was the fact that when sulfadiazine and streptomycin were introduced simultaneously into the yolk sacs of infected

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2. Goodpasture, E. W., and Anderson, L.: The Problem of Infection as Presented by Bacterial Invasion of the Chorioallantoic Membrane of Chick Embryos, *Am. J. Path.* 13: 149, 1937.

3. Jones, D.; Metzger, H. J.; Schatz, A., and Waksman, S. A.: Control of Gram-Negative Bacteria in Experimental Animals by Streptomycin, *Science* 100: 103, 1944.

4. Hall, W. H., and Spink, W. W.: Therapy of Experimental *Brucella* Infection in the Developing Chick Embryo: I. Infection and Therapy via the Allantoic Sac, to be published. Shaffer, J. M., and Spink, W. W.: Therapy of Experimental *Brucella* Infection in the Developing Chick Embryo: II. Infection and Therapy via the Yolk Sac, to be published.

From the Division of Internal Medicine, University of Minnesota Hospitals and Medical School, Minneapolis.
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Read before the annual meeting of the Central Society for Clinical Research, Chicago, Oct. 31, 1947.
Dr. James Shaffer is Research Fellow in Chemotherapy under a grant from Commercial Solvents Corporation.
1. Carpenter, C. M., and Boak, R. A.: The Treatment of Human Brucellosis, *Medicine* 15: 103, 1936.

embryos, not only was the survival rate greater but *Brucella* organisms were absent from the cultures of tissues in the majority of the embryos. It has been demonstrated repeatedly that the combination of sulfadiazine and streptomycin has a much more effective antibruella action than either drug alone. The results of a typical experiment are illustrated in chart 1. The important feature in this particular experiment is that the livers of only 13 per cent of the embryos contained viable *Brucella* organisms when the combination was employed in treatment, whereas *Brucella* organisms were recovered from 77 per cent treated with streptomycin and 92 per cent treated with sodium sulfadiazine. While the foregoing results have dealt with infections due to *Br. abortus*, the combination of sulfadiazine and streptomycin has been just as effective for infections due to *Brucella suis* and *Brucella melitensis*.

SULFONAMIDE COMPOUNDS AND STREPTOMYCIN

Thirty-five patients with active brucellosis have been studied and observed by us, and we have directed therapy. Twenty of the patients received one of the sulfonamide compounds, particularly sulfadiazine; 7 were treated with streptomycin, while 9 had a combination of sulfadiazine and streptomycin administered to them. It is to be emphasized that these cases of sporadic brucellosis were proved bacteriologically by isolation of *Brucella* organisms from the tissues or body fluids. Agglutinins for *Brucella* were demonstrated in the serums of all the patients in titers ranging from 1 to 80 up to 1 to 5,120. A larger number of patients have been treated in this clinic with these agents, but in order to provide for a critical clinical evaluation only the bacteriologically proved cases were selected for analysis in this report. *Br. abortus* was isolated from 33 of the patients and *Br. melitensis* from 2. As is pointed out in tables 1, 2 and 3, many of the patients had been ill for several months and severe complications were present such as subacute bacterial endocarditis, spondylitis and encephalitis.

Sulfonamide Therapy.—Clinical reports which have appeared would indicate that patients having acute brucellosis with bacteremia have made satisfactory response coincident with the administration of one of the sulfonamide compounds.⁵ On the other hand, less encouraging results have also been presented.⁶ In view of the lack of agreement concerning the value of the sulfonamide compounds in human brucellosis, the results of therapy in a significant group of patients have been evaluated in this clinic.

The pertinent clinical data and a summary of the therapy are presented in table 1. In the treatment of these patients varying dosage schedules were used, but the aim of treatment was to administer a total of 6 Gm. of a sulfonamide compound a day for approximately three weeks. Four of the patients received sulfanilamide, one sulfamerazine and 15 sulfadiazine. Six of the patients appeared to have recovered completely after the administration of a sulfonamide drug (cases 1, 3,

5, 6, 10 and 15). It is of interest that 2 of these patients had severe spondylitis demonstrable roentgenologically. Recovery of these patients was undoubtedly in part due to rest in bed and immobilization of the spine. Two of the patients (cases 4 and 17) were improved after therapy, but complete recovery occurred only after a considerable length of time. Sulfanilamide did not alter the course of 1 patient (case 2) who had subacute bacterial endocarditis.

Seven of the patients (cases 7, 8, 12, 13, 16, 18 and 19) had positive cultures for *Brucella* after the cessation of therapy. In several instances, there was temporary improvement in the condition of the patients but clinical and bacteriologic relapses occurred after treatment. There is every indication that sulfonamide therapy did not eradicate *Brucella* from the tissues in well over one third of the patients. Furthermore, recovery in some of the remaining patients might well have been independent of sulfonamide therapy and more directly associated with bed rest. Following the observations of others,⁷ we carried out splenectomy in 1 patient (case 13) in an attempt to eliminate a possible persistent focus of infection. In this particular case

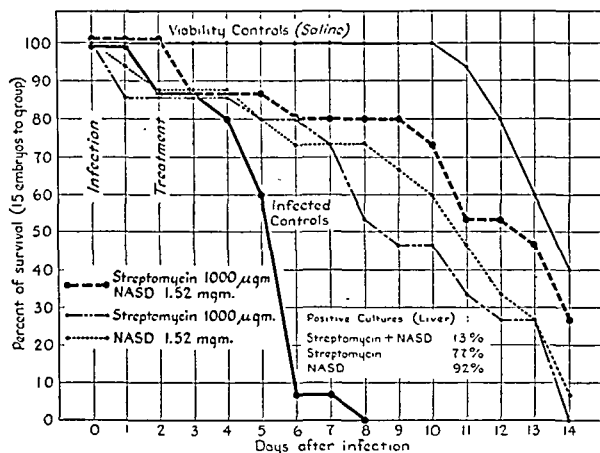


Chart 1.—Illustrating comparative results of sulfadiazine and streptomycin, and a combination of the two, in protecting chick embryos against infection with smooth culture of *Br. abortus* (infecting dose: 364 organisms.) Note eradication of *Brucella* from tissues by combination of sulfadiazine and streptomycin as judged by cultures of livers of infected and treated embryos.

such a procedure was without benefit. Multiple cultures of the spleen remained sterile for *Brucella*. This and other studies on the pathogenesis of brucellosis have convinced us that splenectomy in brucellosis, except in extremely rare cases, is just as illogical as removing the spleen from patients with chronic relapsing malaria.

Streptomycin Therapy.—One of the remarkable properties of streptomycin is that the *in vitro* growth of all three species of *Brucella* is inhibited by concentrations of the antibiotic which can be readily attained in the blood of human subjects.⁸ Live, Sperling and Stubbs⁹ concluded that streptomycin protected experimentally infected guinea pigs, but in a later report Kelly and Henley¹⁰ found that streptomycin possessed

5. Blumgart, H. L.: Recovery of a Patient with Undulant Fever Treated with Sulfanilamide, *J. A. M. A.* **111**: 521 (Aug. 6) 1938.
Bartels, E. C.: Sulfanilamide in Undulant Fever, *New England J. Med.* **219**: 988, 1938.
Stern, R. L., and Blake, K. W.: Undulant Fever: Its Treatment with Sulfanilamide, *J. A. M. A.* **110**: 1550 (May 7) 1938.
6. Wise, B.: Acute Brucellosis: Clinical, Bacteriologic and Serologic Studies of Three Patients, *Arch. Int. Med.* **72**: 346 (Sept.) 1943.

7. Herrell, W. E., and Nichols, D. R.: The Clinical Use of Streptomycin: A Study of Forty-Five Cases, *Proc. Staff Meet., Mayo Clin.* **20**: 449, 1945.

8. Hall, W. H., and Spink, W. W.: In Vitro Sensitivity of *Brucella* to Streptomycin: Development of Resistance During Streptomycin Treatment, *Proc. Soc. Exper. Biol. & Med.* **64**: 403, 1947.

9. Live, J.; Sperling, F. G., and Stubbs, E. L.: Effect of Streptomycin on Experimental Brucellosis in Guinea Pigs, *Am. J. M. Sc.* **211**: 267, 1946.

10. Kelly, E. H., and Henley, T. F., Jr.: Streptomycin in Experimental Brucellosis, *J. Bact.* **54**: 80, 1947.

little value as a therapeutic agent for mice and guinea pigs infected with *Br. suis*. Several investigators have reported disappointing results following the treatment of human beings with streptomycin.¹¹ However, Finch¹² was encouraged over the results obtained in 6 patients, although 3 of the 6 patients had demonstrable *Brucella* bacteremia after therapy had been concluded. It is of interest that Hewlett and Ernstene¹³ reported a case in which *Br. abortus* was cultured from bile

Seven patients, all with infections due to *Br. abortus*, were treated with streptomycin.¹⁴ Data pertaining to these patients are presented in table 2. The streptomycin was administered intramuscularly in divided doses totaling 2 to 5 Gm. daily. In three instances (cases 2, 5 and 7), therapy with streptomycin had to be discontinued because of toxic reactions to the drug such as fever and dermatitis. In no instance did complete recovery follow the administration of strepto-

TABLE 1.—Summary of Sulfonamide Therapy in Twenty Patients with Active Brucellosis

Case No.	Age	Sex	Duration of Disease	Complications	Bacteriology	Treatment	Results
1	64	M	5 mo.	Cervical spondylitis	<i>Br. abortus</i> from blood once	Sulfanilamide—69 Gm. in 13 days; Thomas collar	Complete recovery; no relapse in 6 yr.
2	36	M	5 mo.	Subacute bacterial endocarditis	<i>Br. abortus</i> from blood 8 times	Sulfanilamide for 40 days prior to hospitalization	No improvement; died after 8 mo. of illness; <i>Br. abortus</i> from vegetations on mitral valve
3	25	M	8 mo.	Lumbar spondylitis	<i>Br. abortus</i> from blood once	Sulfanilamide—84 Gm. in 16 days; body cast and brace	Complete recovery; no relapse in 6 yr.
4	36	M	4 mo.	None	<i>Br. abortus</i> from blood once	Sulfadiazine—109 Gm. in 25 days	Marked improvement; residual weakness; no relapse in 2½ yr.
5	12	M	3 mo.	None	<i>Br. abortus</i> from blood twice	Sulfadiazine—13.5 Gm. in 7 days	Complete recovery; no relapse in 2½ yr.
6	42	F	3 mo.	Thyrototoxicosis	<i>Br. abortus</i> from blood once	Sulfanilamide—46 Gm. in 10 days; iodine; thyroidectomy	Complete recovery; no relapse in 7 yr.
7	36	M	4 mo.	Purulent sinusitis	<i>Br. abortus</i> from blood once	Sulfadiazine—109 Gm. in 19 days; drainage of sinus	Temporary improvement; clinical and bacteriologic relapse
8	40	M	4 mo.	None	<i>Br. abortus</i> from blood 3 times	Sulfadiazine—134 Gm. in 21 days; 81 Gm. in 14 days	Temporary improvement; clinical relapse; recovery after second course of therapy; no relapse in 3 yr.
9	6	M	5 mo.	Conjunctivitis from chickenpox at time brucellosis recognized	<i>Br. abortus</i> from blood once	Sulfadiazine—14 Gm. in 17 days	Improvement; dermatitis from sulfadiazine; given artificial fever therapy
10	65	F	7 mo.	None	<i>Br. abortus</i> from blood once	Sulfadiazine—72 Gm. in 15 days	Complete recovery; no relapse in 2 yr.
11	67	F	8 mo.	None	<i>Br. abortus</i> from blood once	Sulfadiazine—41 Gm. in 10 days	Slight improvement; abacteremic
12	44	M	3½ mo.	None	<i>Br. abortus</i> from blood twice	Sulfadiazine—94.5 Gm. in 17 days	Improvement; bacteriologic relapse
13	28	F	4½ mo.	None	<i>Br. abortus</i> from blood 3 times	Sulfadiazine—134 Gm. in 23 days	Marked improvement; bacteriologic relapse; splenectomy without benefit
14	35	F	14 mo.	Blurring of vision	<i>Br. abortus</i> from blood once	Sulfadiazine—127 Gm. in 21 days	No improvement; abacteremic
15	23	M	1 wk.	None	<i>Br. abortus</i> from blood once	Sulfadiazine—57 Gm. in 11 days	Complete recovery; into Army
16	66	F	6 mo.	None	<i>Br. abortus</i> from blood twice	Sulfadiazine—35.5 Gm. in 18 days; 67 Gm. in 15 days	Improvement; bacteriologic relapse after first course; <i>Br. abortus</i> from cerebrospinal fluid after second course
17	28	M	4 yr.	None	<i>Br. abortus</i> from blood twice	Sulfamerazine—42 Gm. in 11 days	Improvement; drug fever and dermatitis from sulfamerazine; residual weakness
18	41	M	3 mo.	None	<i>Br. abortus</i> from blood 3 times	Sulfadiazine—126 Gm. in 21 days; 69 Gm. in 12 days	Temporary improvement after each course; clinical and bacteriologic relapse after each course
19	32	M	5 days	None	<i>Br. melitensis</i> from blood twice	Sulfadiazine—109 Gm. in 21 days; 45 Gm. in 7 days	Clinical and bacteriologic relapse after first course; clinical relapse after second course
20	41	F	2 wk.	None	<i>Br. melitensis</i> from blood once	Sulfadiazine—125 Gm. in 21 days; 42 Gm. in 7 days	? Clinical relapse after first course; complete recovery after second course

obtained by duodenal drainage. After treatment with streptomycin, cultures of bile remained sterile and the condition of the patient was considerably improved.

11. (a) Reimann, H. A.; Price, A. H., and Elias, W. F.: Streptomycin for Certain Systemic Infections and Its Effect on the Urinary and Fecal Flora. *Arch. Int. Med.* 76: 269 (Nov.) 1945. (b) Nichols, D. R., and Herrell, W. E.: Streptomycin: Its Clinical Uses and Limitations. *J. A. M. A.* 132: 200 (Sept. 28) 1946. (c) Pulaski, E. J., and Ampacher, W. H.: Streptomycin Therapy in Brucellosis. *Bull. U. S. Army Med. Dept.* 7: 221, 1947. (d) Howe, C.; Miller, E. S.; Kelly, E. H.; Bookwalter, H. L., and Ellington H. V.: Acute Brucellosis Among Laboratory Workers. *New England J. Med.* 236: 741, 1947.

12. Finch, G. H.: Streptomycin Therapy in Undulant Fever. *Am. J. Med.* 2: 485, 1947.

13. Hewlett, J. S., and Ernstene, A. C.: *Brucella Abortus* Infection of the Gallbladder Treated with Streptomycin. *Cleveland Clin. Quart.* 14: 253, 1947.

mycin. In case 21, *Brucella* organisms were isolated from the blood during therapy, although the in vitro growth of this strain was inhibited by 2 micrograms per cubic centimeter of streptomycin. The clinical course of this patient is depicted in chart 2. It is of interest that in this case dermal sensitivity was induced by streptomycin and by phenobarbital. Patient 23 had had chronic brucellosis for twenty-seven months. When he was admitted to the hospital he had signs and symptoms consistent with the diagnosis of subacute

14. In several instances, streptomycin was supplied by Dr. Chester S. Keefer, Chairman of the Committee on Chemotherapeutic and Other Agents of the National Research Council.

bacterial endocarditis due to *Br. abortus* with evidence of involvement of the aortic valve. He was given a total of 118 Gm. of streptomycin over a period of thirty-one days. Coincident with this there was a decline in temperature and clinical improve-

by 50,000 micrograms per cubic centimeter of streptomycin. This resistant culture produced two types of colonies on agar plates, a large and a small colony. The growth of both colonies, especially the small colonies, was stimulated in several types of mediums

TABLE 2.—Summary of Results with Streptomycin in Seven Patients Having Brucellosis

Case No.	Age	Sex	Duration of Disease	Complications	Bacteriology	Treatment	Results
18*	41	M	3 mo.	None	<i>Br. abortus</i> from blood 3 times	21 Gm. in 4 days	Clinical and bacteriologic relapse
21	11	F	6 mo.	None	<i>Br. abortus</i> from blood 5 times	18.25 Gm. in 9 days	Drug fever from streptomycin; bacteremia during and after treatment; gradual improvement
22	24	M	1 mo.	None	<i>Br. abortus</i> from blood 4 times	32 Gm. in 8 days	No improvement; abacteremic after treatment
23	33	M	2½ yr.	Subacute bacterial endocarditis	<i>Br. abortus</i> from blood 7 times, bone marrow once, urine once	118 Gm. in 31 days	Improvement; <i>Br. abortus</i> from blood highly resistant to streptomycin after treatment; abacteremic after large doses of sulfadiazine; died congestive heart failure, vegetations aortic valve sterile at autopsy
24	46	M	20 mo.	None	<i>Br. abortus</i> from blood	22 Gm. in 6 days	Improvement; drug fever and dermatitis from streptomycin; abacteremic
25	35	M	2 yr.	Encephalitis	<i>Br. abortus</i> from cerebrospinal twice	32.7 Gm. in 10 days (0.1 Gm. intrathecally twice)	Improvement; cerebrospinal fluid sterile after streptomycin
26	47	M	1 mo.	None	<i>Br. abortus</i> from blood twice	26.8 Gm. in 10 days	Improvement; drug fever and dermatitis from streptomycin; also given sulfadiazine; clinical and bacteriologic relapse

* Same as case 18, table 1.

TABLE 3.—Summary of Nine Patients Having Brucellosis and Treated Simultaneously with Streptomycin and Sulfadiazine

Case No.	Age	Sex	Duration of Disease	Complications	Bacteriology	Treatment	Results
27	45	M	9 mo.	Subacute bacterial endocarditis	<i>Br. abortus</i> from blood 4 times	Streptomycin—52 Gm. in 14 days; sulfadiazine—129 Gm. in 22 days	Vertigo; complete recovery; abacteremic and working 9 mo. after treatment
28	28	F	9 mo.	Radiculoneuritis left arm	<i>Br. abortus</i> from blood once; bone marrow once	Streptomycin—57 Gm. in 15 days; sulfadiazine—120 Gm. in 22 days	Complete recovery; no relapse 9 mo. after treatment
29	28	M	2 mo.	Mesenteric adenitis with disabling right lower quadrant pain	<i>Br. abortus</i> from blood once	Streptomycin—22 Gm. in 8 days; sulfadiazine—115 Gm. in 20 days	Complete recovery; no relapse 4 mo. after treatment
30	32	M	9 mo.	Spondylitis	<i>Br. abortus</i> from blood once	Streptomycin—14.5 Gm. in 8 days; sulfadiazine—142 Gm. in 24 days	Complete recovery; coincident with treatment marked abatement of back pain
31	57	M	3 wk.	None	<i>Br. abortus</i> from blood once	Streptomycin—14 Gm. in 8 days; sulfadiazine—124 Gm. in 21 days	Complete recovery
32	25	M	2 mo.	None	<i>Br. abortus</i> from blood twice	Streptomycin—14 Gm. in 7 days; sulfadiazine—76 Gm. in 12 days	Apparent complete recovery; spleen remained palpable
33	31	F	2 mo.	Rheumatic heart—mitral stenosis	<i>Br. abortus</i> from blood once	Streptomycin—14 Gm. in 7 days; sulfadiazine—102 Gm. in 21 days	Apparent complete recovery; chill, fever on 20th day of therapy
34	21	M	1 mo.	None	<i>Br. abortus</i> from blood 7 times	Course 1: streptomycin—18 Gm. in 9 days; sulfadiazine—68 Gm. in 9 days; course 2: Streptomycin—24 Gm. in 12 days; sulfadiazine—94 Gm. in 18 days	Recurrent bacteremia 3 days after 1st course; apparent complete recovery after 2d course
35	33	M	1 mo.	Femoral vein phlebotrombosis; pulmonary emboli; pleural effusion; pulmonary edema; amebiasis	<i>Br. abortus</i> from blood twice	Course 1: streptomycin—71 Gm. in 25 days; sulfadiazine—204 Gm. in 27 days; penicillin—10,100,000 units in 25 days; course 2: streptomycin—13.8 Gm. in 5 days; sulfadiazine—28 Gm. in 5 days; penicillin—6,650,000 units in 19 days	No clinical response following emetine; blood sterile after 6 Gm. streptomycin but clinical condition much worse; fever, tender liver and spleen, repeated pulmonary infarction; slow recovery on combined chemotherapy plus oxygen, feeding by gastric tube, parenteral fluids, anticoagulants, thoracenteses; residual pleural fibrosis and pneumonitis

ment. However, toward the end of treatment with streptomycin, and after therapy had been discontinued, *Brucella* organisms were isolated from the blood. As reported elsewhere,⁸ the original culture isolated from this patient's blood was sensitive in vitro to 1 microgram per cubic centimeter of streptomycin, whereas the growth of the culture obtained from his blood after the discontinuance of therapy was not completely inhibited

by the addition of sublethal concentrations of streptomycin. The streptomycin-resistant cultures isolated from this patient proved to be rather sensitive to sulfadiazine, and for this reason he was treated with large oral doses of sulfadiazine. Coincidentally with therapy he became afebrile and blood cultures remained sterile. But clinical and electrocardiographic evidence was presented which indicated the development of severe myo-

carditis, and he died suddenly from myocardial failure. Postmortem examination revealed a bicuspid aortic valve with a superimposed vegetation. Cultures of this vegetation, heart's blood, liver, spleen, lymph nodes and other tissues did not yield *Brucella*. The myocardium showed evidence of a diffuse and severe

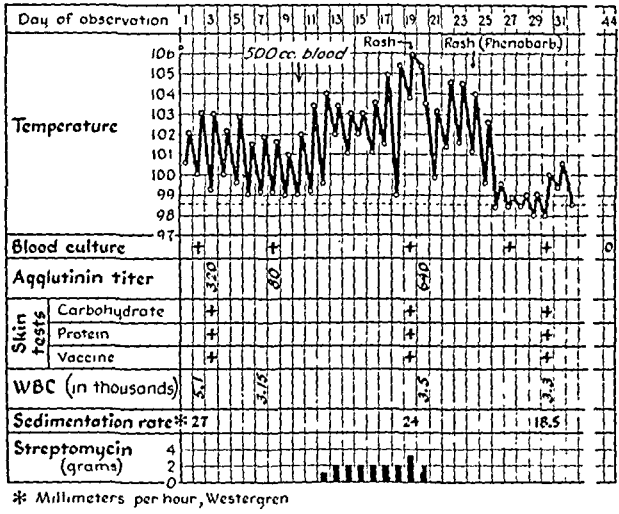


Chart 2.—Demonstrating failure of therapy with streptomycin in L., a girl aged 11 years, with brucellosis due to *Br. abortus* (duration of illness, six months). Treatment discontinued because of drug fever and dermatitis.

inflammatory reaction. It appeared that *Brucella* had been eradicated from the tissues and blood of this patient after intensive treatment with streptomycin and sulfadiazine. As a result of the observations made in this patient in February 1947 and the investigations already under way with the chick embryo technic, it was decided to abandon the use of streptomycin alone in the treatment of human brucellosis in favor of combined treatment with streptomycin and sulfadiazine. The predominating feature in case 25 was encephalitis with isolation of *Br. abortus* from the cerebrospinal fluid, but not from the blood. Coincidentally with the injection of streptomycin into the subarachnoid space the spinal fluid became sterile.

Combined Sulfadiazine and Streptomycin Therapy.—Nine patients with active brucellosis proved bacteriologically have been treated simultaneously with sulfadiazine and streptomycin. Six of the patients had acute brucellosis, while 3 had the chronic form of the disease. The illness was considered to be chronic in those persons who had had manifestations of the infection for three months or more. The essential clinical information pertaining to these patients is shown in table 3.

It is to be noted that the total doses of the two drugs used varied from patient to patient. While streptomycin was administered intramuscularly every six hours, the total daily dose was from 2 to 4 Gm. given over a period of seven to twenty-five days. With a few exceptions, the doses of sulfadiazine given orally were 4 Gm. initially and then 1 Gm. every four hours for three weeks. As a precaution against renal complications from sulfadiazine, the daily fluid balance was observed, and alkalization of the urine was induced by administering a total of 16 Gm. of sodium bicarbonate every twenty-four hours in divided doses. There were no complications due to the sulfonamide therapy. Streptomycin in a dose of 4 Gm. daily for fourteen days

caused a disturbing and persistent vertigo in 1 patient (case 27), but aside from this 1 case no toxic effects were observed.

The results of treatment in this group of cases are highly encouraging. One patient (case 27) had been disabled for nine months. Initial studies revealed evidence of subacute bacterial endocarditis with involvement of the aortic valve. The clinical course of this patient is presented in chart 3. *Br. abortus* was recovered from the blood four times prior to treatment. Although the titer of agglutinins in his serum for *Brucella* was 1 to 2,560, intradermal tests remained negative with those *Brucella* antigens, which usually produce a delayed type of reaction. The failure of patients with *Brucella* endocarditis to respond locally to *Brucella* antigen is a feature of this disease that has been commented on elsewhere.¹⁵ The patient was given streptomycin with a total daily dose of 4 Gm., and he received 52 Gm. in fourteen days. A total of 129 Gm. of sulfadiazine was administered in twenty-two days. It is significant that after treatment and recovery, intradermal tests with *Brucella* antigens gave a delayed type of reaction. Except for a residual vertigo, this patient has remained well for nine months following treatment. Numerous cultures of venous blood have been sterile. Three months after the completion of treatment a biopsy of his liver was carried out and histologic examination did not reveal the presence of granulomatous lesions. In other investigations carried out in this clinic, these lesions have been observed in every case of proved brucellosis studied in this manner.¹⁶ The aortic murmur decreased considerably in intensity. There is every indication that this patient has recovered from a heretofore fatal complication of brucellosis.

Another instance of chronic and disabling brucellosis was exhibited in case 28. This farm wife was confined to bed with fever, chills and radiculoneuritis of the left

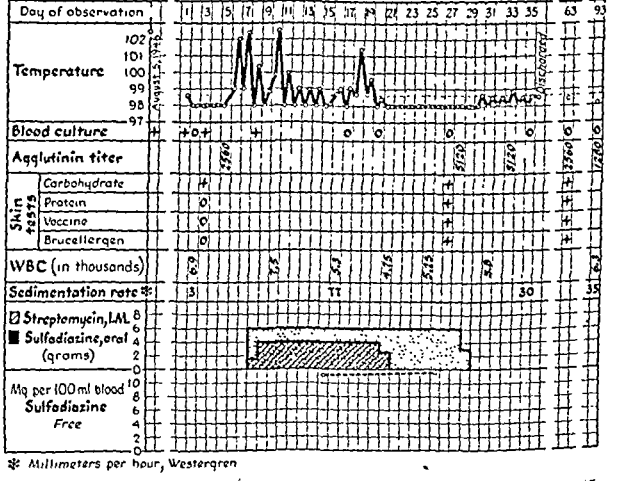


Chart 3.—Illustrating the clinical course of A. M., a man aged 45, having subacute bacterial endocarditis due to *Br. abortus* (duration of illness, nine months), and successfully treated with a combination of sulfadiazine and streptomycin.

arm. Prompt recovery followed the combined type of treatment with no relapse of her illness during the nine months after therapy. Case 29 was of particular

15. Spink, W. W., and Nelson, A. A.: *Brucella Endocarditis*, Ann. Int. Med. 13: 721, 1939.
16. Hoffbauer, F. W.; Walker, W. W., and Spink, W. W.: Studies on the Liver in Human Brucellosis: I. Hepatitis in Active Cases of Brucellosis, to be published.

clinical interest in that this patient had had recurrent attacks of fever, swelling of the peripheral lymph nodes and disabling pain in the right lower quadrant of the abdomen. The latter manifestation was interpreted as being due to mesenteric adenitis. He recovered promptly and completely after treatment, with no evidence of active disease four months later. Patient 30 had been in a state of ill health for several months. He had chills, fever, weakness and severe pain over the lumbar region for one month. The pain in the back was so great that repeated doses of morphine were necessary. Although roentgenologic studies failed to establish the diagnosis it was the general opinion that he had spondylitis due to *Br. abortus*. After the completion of combined therapy the pain abated entirely, and he has had no recurrence of his illness after a lapse of four months. Case 33 demonstrated an instance of bacteremia due to *Br. abortus* in a patient who had mitral stenosis following an attack of rheumatic fever several years previously. The danger of a superimposed *Brucella* infection on the mitral valve was averted by combined therapy. The treatment of patient 33 has been of some aid in determining how long sulfonamide therapy should be continued after the cessation of treatment with streptomycin. He received 2 Gm. of streptomycin daily for nine days and a total of 58 Gm. of sulfadiazine over the same length of time. He appeared to respond to this short course of combined treatment, but he relapsed clinically and bacteriologically three days after treatment had been discontinued. A more prolonged course of treatment, especially with sulfadiazine, resulted in prompt recovery without a subsequent relapse.

Case 35 represents an unusually severe series of complications occurring in a patient with acute brucellosis and demonstrable bacteremia. On entrance to the hospital he had chills and fever without definite localizing signs. He had had amebic dysentery in the past, and when studied on the present occasion both the cysts and vegetative forms of *Endamoeba histolytica* were found in his stools. The diagnosis of amebic hepatitis was entertained but adequate therapy with emetine was without effect. After the establishment of the diagnosis of brucellosis he was given combined therapy, but his course was interrupted by the occurrence of multiple pulmonary emboli. The source of these emboli was believed to be a phlebothrombosis in his leg. Pulmonary edema developed after one episode, and then pleural effusion and pulmonary suppuration. For these reasons, an intensive program of chemotherapy was instituted, which included the use of penicillin, heparin and "dicumarol." He improved slowly and there has been no recurrence of brucellosis.

In summary, the combined use of streptomycin and sulfadiazine in the therapy of patients with either acute or chronic brucellosis has yielded more satisfactory results than has been previously obtained in the University of Minnesota Hospitals. The results are particularly encouraging since the treatment was effective in complications of brucellosis such as subacute bacterial endocarditis and spondylitis.

COMMENT

While the combination of streptomycin and sulfadiazine is an effective form of therapy for human brucellosis, the optimum dosage schedule has not been

determined with certainty. Furthermore, it is possible that another sulfonamide compound or a combination of sulfonamide compounds might be more satisfactory. As a result of the foregoing investigations, a total daily dose of 2 Gm. of streptomycin given for seven days has been suggested, because such an amount appears to give the desired results and toxic reactions are less likely to occur than if larger doses are used or if streptomycin is administered over a longer period of time. It is apparent that it is necessary to administer sulfadiazine for at least two and preferably three weeks. In order to obtain significant and reliable data in a relatively short period of time, an attempt was made to give arbitrary doses of streptomycin and sulfadiazine without too much variation. Pulaski and Amspacher^{11c} gave streptomycin to 17 patients having either acute or chronic brucellosis without benefit, but when streptomycin was combined with sulfadiazine in 2 patients having acute brucellosis there was a prompt response. As a result of this observation they recommended a dose of 0.5 Gm. of streptomycin intramuscularly every six hours and 1 Gm. of sulfadiazine every four hours for at least two weeks.

It is to be emphasized again that the results of combined therapy described in this report are based on the treatment of patients having brucellosis proved bacteriologically. This criterion of diagnosis was essential in dealing with such a variable disease as brucellosis. However, in this clinic other patients having a febrile illness compatible with the clinical features of brucellosis and a high titer of agglutinins for *Brucella* have been successfully treated. It remains to be seen whether the combined therapy will be satisfactory in so-called chronic brucellosis, that is, in patients having a vague type of illness, sterile blood cultures, absent or a low titer of agglutinins and a positive intradermal test with *Brucella* antigen. Thus far, we have been reluctant to give streptomycin and sulfadiazine to this group of patients, primarily because one is too frequently in doubt as to whether active disease is present.

Although combined therapy with streptomycin and sulfadiazine has yielded the most satisfactory results to date in this clinic, the intensive investigations on other antibiotics going on at the present time may bring forth other agents more effective against *Brucella* than streptomycin.

SUMMARY

During the past ten years, specific antibrucella therapy has been investigated at the University of Minnesota Hospitals experimentally and in 35 sporadic cases of human brucellosis proved bacteriologically.

A chick embryo technic being utilized, screening of therapeutic agents has been carried out. The combined administration of sulfadiazine and streptomycin proved to be more effective than either agent alone. A remarkable correlation of therapeutic results in infected chick embryos and human patients has been observed.

Nine patients have been treated with a combination of sulfadiazine and streptomycin, which has yielded more satisfactory results than any other therapy used to date. It is recommended for the present that streptomycin be administered intramuscularly in doses of 0.5 Gm. every six hours for seven days. Therapy with sulfadiazine should be initiated simultaneously with an oral dose of 4 Gm. and then 1 Gm. every four hours for at least two and preferably three weeks.

MARGARINE AND THE GROWTH OF CHILDREN

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This study was undertaken to determine whether there is any nutritional difference, as shown by increases in height and weight in significantly large groups of children, when the source of supplementary table fat in their diets is vegetable (margarine) rather than animal (butter).

For a number of years there has been some controversy among nutritionists and other workers in the field of fat nutrition regarding the relative merits of animal and vegetable fats in the human diet. A great deal of experimentation has been carried out, the laboratory rat being used, in the main, as the experimental animal.

Little experimental work has been done in fat nutrition, however, among human subjects. For that reason, the present study was decided on. To insure valid results, examinations of the 267 children (white) included in this study were made for a period of two years.

As early as 1925 Holmes,¹ in studies carried out on human subjects, found that margarine was from 93 to 97 per cent digestible. Bunker,² in 1927, stated:

Beef fat excreted in the milk of the cow is no different in its origin from beef fat which is retained within the animal, although the chemistry of butter fat and oil differ somewhat. Each is a suitable food. The vegetable oils, also, such as olive oil, palm oil, coconut oil, peanut oil, cottonseed oil, and others are all suitable foodstuffs. The digestibility of the various animal and vegetable fats is high.

Some years later Carlson³ stated:

All the scientific data on the digestibility, flavor and color of the dietary fats show clearly that there is no significant difference in digestibility between animal and vegetable fats and that the acceptability of those fats in regard to color and flavor is a matter of past conditioning of the individual and of no other significance in nutrition.

Boutwell⁴ and others, after experimental studies on rats, concluded:

1. With lactose as the sole carbohydrate . . . rats showed superior growth when fed butter or lard as compared to corn oil, coconut oil, cottonseed oil, soybean oil, peanut oil, olive oil and hydrogenated cottonseed oil. 2. With a mixture of carbohydrates composed of sucrose, starch, dextrose, dextrin and lactose in the diet, the average growth response of the animals fed vegetable oils was equal to that of the animals fed butter and lard. The growth rate on this ration was more rapid than when all the carbohydrate was present as lactose. 3. Properly fortified oleomargarine fats gave growth equal to butter fat over a period of six weeks when the above mixture of carbohydrates was incorporated in the rations.

From the Department of Pediatrics, University of Illinois College of Medicine.

Aided by a grant from the National Association of Margarine Manufacturers. Terms of the grant provided that findings from the study could be published, regardless of results.

1. Holmes, A. D.: Digestibility of Oleomargarine, Boston M. & S. J. 1925: 1210 (June 18) 1925.

2. Bunker, J. W. M.: Evidence Concerning the Reputed Health Values of Fats: A Review of the Literature, Am. J. Pub. Health 17: 997 (Oct.) 1927.

3. Carlson, A. J.: Facts and Fancies About Food Fats, Am. J. Pub. Health 31: 1181 (Nov.) 1941.

4. Boutwell, R. K.; Geyer, R. P.; Elvehjem, C. A.; and Hart, E. B.: Further Studies on Comparative Value of Butter Fat, Vegetable Oils and Oleomargarines, J. Nutrition 26: 601 (Dec.) 1943.

Deuel,⁵ on the other hand, found no difference in the growth of weanling rats at any time over a twelve week period whether they were fed mineralized skimmed milk powder, vitamin supplements and butter, or corn, cottonseed, peanut or soybean oils, or margarine. The extent of growth was confirmed at three and six weeks by roentgen determinations of length of the tibia. Also, the efficiencies of conversion of these various fats to body tissue were identical. These experiments refute the idea that butter fat possesses certain fatty acids not present in other fats, which are essential to growth.

The Council on Foods and Nutrition of the American Medical Association⁶ stated:

It is therefore possible to conclude that at present there is no scientific evidence to show that the use of fortified margarine in an average adult diet would lead to nutritional difficulties. A similar statement is probably justified in the case of growing children, but preliminary reports from animal experiments indicate that more work is necessary before any specific conclusions can be made.

Graves⁷ stated:

When pure, all fats are equally available for the energy needs of the body . . . the shortening powers and keeping qualities of [both butter and margarine] are about the same and they are equally assimilable.

Again, Bloor⁸ pointed out:

Very little need be said about the relative nutritional value of fats and hence of availability and distribution for the reason that most of the ordinary food fats of both plant and animal origin consist mainly of the same few fatty acids—oleic, palmitic and stearic—in varying proportions, and it is to be expected that they would not differ much in digestibility or in metabolic usefulness.

Recently Deuel⁹ reaffirmed the fact that vitamin-fortified margarine has a nutritional value substantially equivalent to that of butter. This belief is supported by the conclusions of an entirely unprejudiced group, the Committee on Public Health Relations of the New York Academy of Medicine, which recommended in its report of Feb. 1, 1943, that wide publicity, both lay and professional, be given to the fact that margarine fortified with vitamin A is nutritionally equal to butter. A similar conclusion was reached by the Food and Nutrition Board of the National Research Council in its Reprint and Circular Series No. 118, released in August 1943.

Cowgill¹⁰ concluded:

Edible fats, the melting points of which are not too high to prevent liquefaction in the alimentary tract, are digested and absorbed to about the same degree. Such differences as have been found are of no practical nutritional significance. . . . Natural fats differ with respect to their content of the essential unsaturated fatty acids but the amounts needed by the organism are so small that these are probably of no practical nutritional significance. Natural fats have not been found to differ appreciably in their effect on the body's needs for other dietary essentials. . . . In a diet otherwise nutritionally satisfactory, a vegetable fat such as that contained in

5. Deuel, H. J., Jr.; Movitt, E.; Hallman, L. F., and Mattson, F.: Studies of the Comparative Nutritive Value of Fats: I. Growth Rate and Efficiency of Conversion of Various Diets to Tissue, J. Nutrition 27: 107 (Jan.) 1944.

6. The Comparative Nutritional Value of Butter and Oleomargarine, report of Council on Foods and Nutrition, J. A. M. A. 119: 1425 (Aug. 22) 1942.

7. Graves, L.: Fats in Our Daily Fare, Mod. Hosp. 60: 90 (March) 1943.

8. Bloor, W. R.: Role of Fat in the Diet, J. A. M. A. 119: 1018 (July 25) 1942.

9. Deuel, H. J., Jr.: The Butter-Margarine Controversy, Science 103: 183 (Feb. 15) 1946.

10. Cowgill, G. R.: Relative Nutritive Values of Animal and Vegetable Fats, Physiol. Rev. 25: 664 (Oct.) 1945.

a margarine can serve adequately in place of butter fat for growth and reproduction, as shown by experiments with eight and more successive generations of rats.

Boer and colleagues¹¹ recently reported on the presence of vaccenic acid in summer butter. They stated that vaccenic acid has growth-promoting properties in rats. Euler and associates,¹² however, reported inability to demonstrate any growth-promoting factor peculiar to butter. Moreover, the same authors¹³ in later studies "to characterize the physiological influence on the rat's organism of different fats . . . compared the growth, the fertility and the longevity of rats, which were reared on a fat nutrition, consisting either of butter or of margarine (fat mixture MW)." They concluded "that the nutritional and physiological value of the slightly varying fat mixtures, which we employed under the designation of MW and which correspond to the margarines manufactured in Sweden during the period from October 1943 to November 1946, is in no way inferior to the value of butter."

Deuel and associates,¹⁴ meanwhile, found vegetable fats and margarine equal to or better than butter in supporting augmented growth in two series of tests with rats, based on administration of growth hormone from the anterior lobe of the pituitary body.

PLAN OF STUDY

Two groups of children were included in the study, which covered a period of two years. One group received only margarine as the table fat in the diet. It was used on bread and vegetables, as well as in the making of pastry and in frying. Fortified margarine was supplied by a number of the various companies now manufacturing the product and was the same as that sold to the public. The margarine used was all derived from vegetable fats, and contained no fat from animal sources. The second group of children used only butter for the same purposes.

The margarine group lived in an institution housing 130 children ranging in age from 3 to 16 years. The children were half-orphans, for the most part from broken homes. They attended the neighborhood schools and returned to the institution for lunch. Samplings also indicated that the children were served margarine on their occasional visits to families outside the institution.

The butter group was in another institution some 10 miles (16 kilometers) away. It included 125 children ranging in age from 6 to 17 years, who were mostly orphans.

The diet in each institution was carefully supervised by trained dietitians and so regulated that 25 to 30 per cent of the total calories were supplied by fat. The margarine constituted approximately 65 to 70 per cent of the total fat calories.

All of the children in both groups were weighed and measured each month under medical supervision. A careful check was made from time to time to be sure that weights and measurements were accurately deter-

mined. Routine red blood cell counts and hemoglobin determinations were made on each child after the study was started and again one year later. Specialists in pediatrics supervised the medical care of all the children. A record was kept of the character and duration of all illnesses contracted by the children.

RESULTS

At the close of the study more than 200 records were available for analysis in the margarine group. Because of the turnover in the institution, the period of study was not uniform and ranged from about a month to a maximum of twenty-four months. In the butter group there were about 150 records available, ranging up to twenty-four months' observation time on weight, height, red blood count, hemoglobin and illnesses.

It was found that those children who stayed a very short time had extreme irregularities in weight gains. Since it would serve no useful purpose and only increase the margin of error in the computations, all those records of children who were studied less than six months were discarded. About 40 in each group were so eliminated, leaving 160 records in the margarine group and 107 in the butter group.

Blood Studies.—There were 65 children in the margarine group and 85 in the butter group from whose records differences in erythrocyte count and hemoglobin could be computed. At the beginning of the study there was an average red cell count of 4,284,000 in the margarine group, the lowest being 3,710,000 and the highest 4,870,000. One year later the average was 4,198,000, the low 3,440,000 and the high 5,560,000. Comparable figures for the butter group were as follows: At the beginning, the average red blood cell count was 4,629,000; low, 3,940,000; high, 5,640,000; one year later, the average was 4,640,000; low, 3,920,000, and high, 5,560,000.

In the margarine group the average hemoglobin was 13.7 Gm. per hundred cubic centimeters, with a low of 11.3 and a high of 16.6. One year later the figures were 13.4, 10.5 and 18.6, respectively. For the butter group, at the beginning of the study the hemoglobin figures were: average, 15.4 Gm.; low, 13.8, and high, 17.9. One year later the findings were: average, 15.3; low, 12.4, and high, 17.5.

All these figures are within normal limits in our clinical experience. Moreover, according to Osgood and Baker,¹⁵ there is an average of 12 Gm. of hemoglobin, ranging from 10 to 14 Gm., in the blood of normal children from 4 to 13 years of age. Griffith and Mitchell¹⁶ stated that the red blood cell count remains at about 4,500,000 to 5,000,000 throughout childhood. Hence it would appear that the blood cell counts in both institutions were in line with counts found in similar groups of children. Furthermore, any variations which occurred were well within the usual errors in making hemoglobin and red blood cell determinations.

Height and Weight.—All the records contained data on weight in pounds and ounces and height in inches. Gains in weight and height are partly a function of time, so a further adjustment had to be made to facilitate valid comparison. The basis of exactly one year was used for standardization. The period of the greatest majority of the cases was over a year. Since this means that the majority had to be reduced in value to be

11. Boer, J.; Jansen, B. C. P., and Kentie, A.: On the Growth-Promoting Factor for Rats Present in Summer Butter, *J. Nutrition* 33: 339 (March) 1947. Boer, J.; Jansen, B. C. P.; Kentie, A., and Knol, H. W.: The Growth-Promoting Action of Vaccenic Acid, *ibid.* 33: 359 (March) 1947.

12. von Euler, B.; von Euler, H., and Saberg, I.: Zur Kenntnis des Nährwertes verschiedener Fette, *Die Ernährung* 7: 65, 1942; Versuche über die Nahrungsfaktoren der Butter, *ibid.* 8: 257, 1943.

13. von Euler, B., and von Euler, H.: Biological Facts on Vaccenic Acid, *Ark. f. kemi, mineralo. o. geol.*, June 1947, vol. 25B, no. 2.

14. Deuel, H. J., Jr.; Hendrick, C., and Crockett, M. E.: Studies on the Comparative Nutritive Values of Fats: VII. Growth Rate with Restricted Calories and on Injection of the Growth Hormone, *J. Nutrition* 31: 737 (June) 1946.

15. Osgood, E. E., and Baker, R. L.: Erythrocyte, Hemoglobin, Cell Volume and Color, Volume and Saturation Index Standards for Normal Children of School Age, *Am. J. Dis. Child.* 60: 343 (Aug.) 1935.

16. Griffith, J. P. C., and Mitchell, A. G.: The Diseases of Infants and Children, ed. 2, Philadelphia, W. B. Saunders Company, 1937, p. 38.

standardized, chance errors tend to be reduced as well.

An analysis of the total cases in each group is shown in tables 1 and 2. Average annual weight and height gains for boys and girls are shown. For additional comparison, the average gains from standard height-weight tables are included under the column headed "Standard."

Since changes in weight and height are also a function of age, only groups of like age are compared.

The standard error is appended to each value in the margarine group, and comparable value in the butter group. For a test of statistical significance at the 5 per cent level, the difference between two comparable entries in the margarine and standard columns must be greater than twice the standard error. For instance, on the first line in table 1, under "Boys," in the column headed "Margarine," the average yearly gain in weight was 6.7 pounds (3,039 Gm.) with a standard error of 0.6 pound (272.2 Gm.). Twice 0.6 is 1.2, which added to 6.7 gives 7.9 pounds (3,583.4 Gm.). The average gain in the standard column is 7.2 pounds (3,265.9 Gm.), well within the range of the standard error, and the difference is, therefore, not statistically significant.

TABLE 1.—Average Yearly Gain in Weight (in Pounds) for Children Observed at Least Six Months

Age, Years	Boys			Girls		
	Margarine	Butter	Standard	Margarine	Butter	Standard
All (2-15)	6.7 ± 0.6	.....	7.2	7.1 ± 0.6	.....	6.9
All (6-17)	.....	7.0	7.9	.....	5.9	7.1
6-13.....	7.2 ± 0.7	8.8 ± 0.9	7.5	8.0 ± 0.7	7.2 ± 1.0	8.0
2-5.....	4.2 ± 0.3	.....	5.2	3.9 ± 0.4	.....	4.6
6-9.....	5.3 ± 0.5	7.1 ± 2.2	6.5	7.5 ± 0.5	8.3 ± 1.7	6.2
10-13.....	12.3 ± 1.7	9.4 ± 1.0	9.5	10.6 ± 1.3	7.1 ± 1.1	9.7
14-17.....	.....	6.6	8.7	.....	5.4	5.2

TABLE 2.—Average Yearly Gain in Height (in Inches) for Children Observed at Least Six Months

Age, Years	Boys			Girls		
	Margarine	Butter	Standard	Margarine	Butter	Standard
All (2-15)	2.2 ± 0.1	.....	2.3	2.1 ± 0.1	.....	2.2
All (6-17)	.....	1.5	1.8	.....	1.0	1.7
6-13.....	2.0 ± 0.1	2.1 ± 0.1	2.1	2.0 ± 0.1	1.2 ± 0.1	2.1
2-5.....	2.5 ± 0.1	.....	3.0	2.3 ± 0.1	.....	2.7
6-9.....	1.9 ± 0.1	1.9 ± 0.2	2.0	2.1 ± 0.1	1.5 ± 0.3	2.2
10-13.....	2.2 ± 0.2	2.2 ± 0.2	2.2	2.0 ± 0.1	1.2 ± 0.1	2.0
14-17.....	.....	0.7	1.2	.....	0.4	1.0

For a test of significance between a margarine and butter value the formula

$$\sigma_{\bar{x}_1 - \bar{x}_2} = \sqrt{\sigma_{\bar{x}_1}^2 + \sigma_{\bar{x}_2}^2}$$

is used. In only 3 cases does it seem necessary to perform this test. This is in table 1, under Boys, ages 6-13 and ages 6-9, and table 3, under Boys, 6-9 years of age. In none of these cases was the difference found significant.

In both table 1 and table 2 all average gains in the margarine group were at least as great (including the standard error) as the gain in either the butter group or a standard group, with two exceptions. These exceptions were in the 2 to 5 year age groups. This is due to the fact that the average age in this particular group in the margarine study was greater than the midvalue of the group. In fact, there were only 1 boy and 1 girl 2 years old included in the study.

It is believed that the adjustment of all the values to an annual basis is accurate. However, to eliminate doubt as to the validity of the method, comparisons were made using only those subjects who were observed for the maximum time. There were 51 children in the

margarine group who were studied the maximum time of twenty-four months. In the butter group there were 53 under observation for the maximum twenty-four months.

Again the values were reduced to an annual average gain, going far to reduce chance errors, since all values were practically halved. Tables 3 and 4 exhibit the data.

TABLE 3.—Average Yearly Gain in Weight (in Pounds) in Children Observed Twenty-Four Months

Age, Years	Boys			Girls		
	Margarine	Butter	Standard	Margarine	Butter	Standard
All (2-15)	6.7 ± 0.9	.....	7.2	8.2 ± 1.0	.....	6.9
All (6-17)	.....	8.1	7.9	.....	6.3	7.1
6-13.....	7.4 ± 1.2	8.7 ± 1.2	7.5	9.5 ± 1.1	8.3 ± 1.2	6.0
2-5.....	4.0 ± 0.5	.....	5.2	4.0 ± 0.4	.....	4.6
6-9.....	5.1 ± 0.6	6.7 ± 2.3	5.5	6.3 ± 1.1	.....	6.2
10-13.....	12.2 ± 2.4	9.4 ± 1.3	9.5	11.0 ± 1.7	8.3 ± 1.2	9.7
14-17.....	.....	7.0	8.7	.....	6.7	5.2

In only one case, the 2-5 year age group in the boys, in table 4, is the comparison unfavorable. In all other combinations margarine shows up as at least as efficient a source of fat for growth as butter in the normal diet.

COMMENT

It is evident from the tables that growth of the group fed margarine, as determined by increases in height and weight, was comparable to that of the children fed butter and to standard height and weight values for the same age group.

Furthermore, it was noted that in the margarine group there was no increase in the amount of illness. Illnesses in general had been on the decline in the margarine group for the last four or five years, and this decrease in the incidence of illness continued during the period of the study. This compares with conditions present in the community for the last five years.

It was interesting to observe how the children accepted margarine. When it first made its appearance on the table—in its white form—and the study was explained to the children, the younger children promptly accepted it. The childrer in the older age group did not take to it too kindly. Very shortly thereafter, however, a shipment of colored margarine came in. This was cut up into the usual pats and all the children then ate it readily and liberally. Thereafter it was always served cut in pats and colored.

At no time during the period of the study was it considered that vitamin A played any definite role in the results of the study. The reason, of course, is that

TABLE 4.—Average Yearly Gain in Height (in Inches) in Children Observed Twenty-Four Months

Age, Years	Boys			Girls		
	Margarine	Butter	Standard	Margarine	Butter	Standard
All (2-15)	2.2 ± 0.2	.....	2.3	2.2 ± 0.2	.....	2.2
All (6-17)	.....	1.6	1.8	.....	0.9	1.7
6-13.....	2.1 ± 0.3	2.2 ± 0.2	2.1	2.2 ± 0.2	1.2 ± 0.2	2.1
2-5.....	2.5 ± 0.1	.....	3.0	2.5 ± 0.1	.....	2.7
6-9.....	2.0 ± 0.4	2.0 ± 0.1	2.0	2.4 ± 0.2	.....	2.2
10-13.....	2.3 ± 0.3	2.2 ± 0.2	2.2	2.0 ± 0.2	1.2 ± 0.2	2.0
14-17.....	.....	0.7	1.2	.....	0.1	1.0

all the margarine used contained 15,000 units of vitamin A per pound—which is equal to or greater than the amount present in average butter.

Blood studies showed that there were no significant differences between the margarine or butter groups.

The children in the margarine group experienced a high degree of good health during the study, and in comparing their health to that of the butter group it appears to have been much better.

When infirmary records are compared it is readily seen that the margarine group fared much better than the butter group. We are not making any claims that the margarine group were healthier simply because their diet contained margarine. Other variables are more likely to account for their better health.

At no time during the course of the study did either institution experience any type of epidemic, and no doubt this may in part be due to the fact that both institutions practiced accepted preventive measures on all their children.

CONCLUSIONS

Growing children experience normal growth in height and weight when their diets contain only fortified margarine as table fat, as shown by comparison with children fed on similar diets with butter as the source of table fat and by comparison with standard height and weight tables.

TABLE 5.—Group Total and Average Yearly Gains in Weight (Pounds) and Height (Inches); Children Observed at Least Six Months

Age, Years	Margarine Group			Butter Group		
	No. of Children	Weight	Height	No. of Children	Weight	Height
2-5.....	45	182.389	106.784	..	.....	.....
6-9.....	71	439.368	139.446	13	96.872	29.332
10-13.....	41	402.620	86.432	53	440.173	90.510
14-15.....	3	43.121	6.878	..	.....	.....
14-17.....	..	.....	.....	41	229.328	25.229
Totals.....	160	1,127.498	333.540	107	760.373	139.141
Average.....	...	7.047	2.122	...	7.100	1.300

TABLE 6.—Group Total and Average Yearly Gains, by Sex, in Weight (Pounds) and Height (Inches); Children Observed at Least Six Months

Age, Years	Boys			Girls		
	No. of Children	Weight	Height	No. of Children	Weight	Height
Margarine Group						
2-5.....	24	101.080	59.171	21	81.311	47.614
6-9.....	41	215.701	77.800	30	223.667	61.617
10-13.....	16	107.327	35.600	25	265.290	60.833
14-15.....	2	42.273	6.878	1	.848	.....
Totals.....	83	556.381	179.449	77	571.116	160.094
Average.....	..	6.703	2.162	..	7.417	2.079
Butter Group						
6-9.....	9	63.793	17.294	4	33.079	6.038
10-13.....	28	263.559	60.935	25	176.614	29.576
14-17.....	26	172.604	18.800	15	50.824	6.499
Totals.....	63	499.856	97.029	44	260.517	42.113
Average.....	..	7.934	1.540	..	5.921	0.957

Whether the greater part of the fat of the diet is derived from vegetable or animal sources has no effect on growth and health as shown by changes in height and weight and health records of children observed over a two year period.

During a two year period the health of 267 children was uniformly good so far as serious illness is concerned, regardless of whether margarine or butter was the source of the greater part of the fat in the diet.

If there is a growth factor present in butter which is not present in margarine, there is no evidence in the present study that such a factor plays any important part in the growth of children as determined by increases in height and weight.

Margarine is a good source of table fat in growing children, as determined by a two year study. Children readily accept margarine as a table spread when it is colored and served in pats.

Special Article

PALLIATIVE TREATMENT OF THE PATIENT WITH ADVANCED CANCER

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This article is the eighth of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment. When complete, the series will be published in book form by the W. B. Saunders Company under the sponsorship of the American Medical Association and the American Cancer Society.

Many thousands of patients with cancer are being cured each year with the resources already at the command of physicians, but there are just as many who are not cured. The very existence of each of these uncured patients drives home the fact that possibly some physician did too little or saw the patient too late or possibly the patient had a type of cancer in which there was only a remote chance of cure, whatever or whenever it was done. Every death from cancer is indicative of failure somewhere along the line; failure to teach patients to come early for advice, failure of the physician to act quickly and thoroughly or failure of the members of the medical profession to find the cause of and a sure cure for all cancers. Since this is true the attitude of the physician who is dealing with a patient with advanced cancer must be one of humility. It behooves him to do all he can to help the patient through his final days.

RELATION OF PHYSICIAN AND PATIENT

This article deals with the palliative treatment of the patient with advanced cancer. It is assumed that the cancer is considered incurable by present day methods and that any treatment administered is given to make the remaining days more tolerable. Not infrequently treatment intended to be palliative may be curative. The condition of no patient is positively hopeless as long as he is alive.

What does this patient know about his condition? Does he know that he has cancer or has had cancer? What policy should be adopted in general in dealing with the cancer patient? Which physician is right, the one who never tells or the one who usually tells the patient that he has cancer?

Dr. Richard Cabot¹ in his day created a sensation about the advisability of telling patients the truth. Dr. Cabot visited the Pondville Hospital, one of Massachusetts' two cancer hospitals. He was particularly interested in the attitudes shown by the patients and the physicians. He heard 2 patients ask if they had cancer and noted the replies made. Later in the day he was asked whether the physicians were upholding his teachings in regard to telling patients the truth, and his answer was, "Certainly, I never said that you had to tell them the whole truth."

My associates and I are accustomed to seeing hundreds of cancer patients in the Pondville Hospital and

¹From the Pondville Hospital (Massachusetts Department of Public Health), Walpole, Mass., and the Tumor Clinic of the Massachusetts General Hospital, Boston.
1. Cabot, R.: The Meaning of Right and Wrong, New York, The Macmillan Company, 1933, p. 313.

clinics each month. Every patient knows that it is a cancer hospital and that he would not be there unless there was a suggestion of cancer. If the patient asks the nature of his ailment he is told, but the seriousness of the lesion and the prognosis is not revealed necessarily. Still, in face of these conditions, Dr. Richard Cabot in a public meeting stated that the morale of the patients in the Pondville Hospital surpassed that of any he had ever seen in his wards in a general hospital.

I recall the patient who stated that she knew she had cancer but asked me not to tell her husband; an hour later the husband told me that I must do everything possible to keep his wife from learning that she had the disease. I believe the time has come to call a spade a spade and not to follow the course of the physician who recently referred a cancer patient with the statement that, "I told her she had something bad, but I did not use 'the word.'" Sometimes the patients are amused at the physician's clumsy attempts to avoid the issue.

It has been my experience that the patient with treatable cancer is more willing to have treatment, is a better patient during treatment and is more apt to be faithful in his follow-up visits if he knows something about the diagnosis of his case and the program to be followed.

The patient with advanced cancer who has been let in on the secret early, possibly before he had radiation or surgical therapy, is doubtless wise enough to know that his persistent or recurrent ailment is the same disease not responding to treatment. He will not ask many questions, for he knows he is failing and will not have to be told.

I do not advocate going out of one's way to deliberately tell a man that death is around the corner. I did that once with a Catholic clergyman who had failed to do well after several operations, as I thought he might wish to prepare for death. He was amazed at the statement and was unwilling to believe it. The patient with cancer never gives up hope and will fight as long as his physician stands by.

HOSPITALIZATION

The problem may arise as to whether a given patient should be treated at home or in a hospital. There are many factors to be considered, such as the degree of pain, the need for dressings, the number of persons in the home and the facilities for home nursing care, and an individual decision must be made. The patient would like to be at home or near home so that he might see his friends and relatives.

Ideally, there should be beds for a limited number of patients with advanced cancer in every community general hospital. If all hospitals cooperated in this program, the burden would not be great on any one institution. The intern and the resident as part of their training should be taught to care for these patients. Many hospitals refuse to admit patients with advanced cancer or to let them stay once they have been declared incurable. As a result the intern and the resident never see the late course of the disease and do not profit by autopsy observations. How can these physicians care for cancer patients in their homes if they have not been taught? How can they be expected to show interest in patients with incurable cancer when the attitude of their teachers has been to get rid of them

as soon as possible? Where are private duty nurses in the home or visiting nurses going to learn the care of the cancer patient?

The patient who is suffering from an incurable cancer is one of the physicians' greatest trials; he knows that the disease is incurable but he must show no less interest in the patient because of that. He must listen to his symptoms and try to relieve them. He must not avoid making calls or be hasty in his attentions. At the Pondville Hospital patients with advanced disease are treated in rooms on the same wards as those with less advanced radiation or operative cases. They receive the same number of visits and the same degree of attention as their more fortunate neighbors. It is less difficult for the visiting physician or resident to see the good and the bad in turn than it would be if those with advanced cancers were isolated in one group. Rogers² has stated, "There is no case of advanced cancer in which 'there is nothing to be done.' Its successful care demands from the doctor a high degree of skill, cheerfulness, understanding and attention to detail."

MEDICAMENTS

If all methods of treatment have failed, the physician knows that death is inevitable, but it may be a long time coming. He may be forced to prescribe drugs that are addicting, and they should be used with care so that therapy may remain effective. The use of mild drugs and hypnotics for the relief of pain can postpone the use of narcotics.

It is erroneous to think that the cancer patient is entitled to all the opiates he wants. He should receive as much as he needs and no more. Any excess will not only cause addiction but increase the patient's discomfort from nausea, vomiting, constipation, itching and euphoria. If the physician is cautious it will not be necessary to increase the strength of the medicament faster than the disease progresses.³ On the other hand, it should be emphasized that if neurosurgical relief measures are used the dosage of the drugs should be reduced quickly to avoid addiction.

A distinction should be drawn between drugs which aid sleep and those that relieve pain. Sometimes a mild pain remover will allow the patient to gain the required sleep. Again, a mild hypnotic may allow sleep without a pain-relieving drug. The ill patient is more conscious of his pain at night and will require more drugs at night. The patient who goes without drugs by day will not need morphine at night but will get along on acetylsalicylic acid. If he receives this medicament by day he may need codeine at night; if codeine relieves the pain during the day he may require morphine at night.

As far as possible the patient should not be allowed to decide when he shall take medicaments or which drug he is to use. When pain is mild or intermittent, he may be the best judge. He should never be given a box of narcotic tablets to take as he pleases, but he should have a nurse or a member of the family supply the drug as he needs it.

Oral administration, whenever possible, should precede the use of drugs by hypodermic injection. Sometimes the needle habit is as bad as the drug habit.

2. Rogers, H.: *The Care of the Patient with Advanced Cancer, in Cancer: A Manual for Practitioners*, Boston, Rumford Press, 1940, pp. 244-252.

3. Daland, E. M.: *The Relief of Pain in Cancer Patients*, Pub. Health Rep., 1937, supp. 121, pp. 1-5.

Hypodermics require the services of a trained person. If they are used unnecessarily this may be the reason for keeping the victim in the hospital rather than at home, or it may necessitate the employment of a nurse before she is actually needed. Oral administration of the same amount of drug is slower to show results and gives approximately two thirds of the benefit produced by hypodermic injection. Sterile hypodermic injections of water should be given only as a test of the need for opiates and should never be used for treatment.

Acetylsalicylic acid is an exceedingly valuable drug in the relief of pain from many types of cancer. It can be given in doses of 0.3 or 0.6 Gm. (5 or 10 grains) every three or four hours. It is less irritating to the stomach than the other salicylates. Contrary to the opinion of many laymen it is apparently not harmful to the heart in reasonable quantities. It is sometimes more effective in combination with acetophenetidin and caffeine.

Acetophenetidin and acetanilid are not good drugs for the relief of the pain from cancer. They are not as effective for long use, and both may produce toxic symptoms if large doses are given over a twenty-four hour period.

Cobra venom is a nonnarcotic drug that has been widely advocated for relief of severe pain. Intramuscular injections of 1 or 2 cc. are given once a day for seven days, then single injections are given every three or four days. The results as reported from different clinics are variable. In my hands it has proved of little benefit.

Codeine is perhaps the most useful of the narcotics. It may be habit forming⁴ but is less likely to be so than is morphine. For the relief of distressing cough it may be used in as small doses as 0.015 Gm. ($\frac{1}{4}$ grain), but for pain 0.03 Gm. ($\frac{1}{2}$ grain) is the smallest effective dose. It may be given every three or four hours. Many physicians consider that acetylsalicylic acid administered with codeine makes the latter more effective and longer lasting. I have found this true in some cases but not consistently. The administration of acetylsalicylic acid can be alternated with that of codeine to effectively lengthen the time between the doses of codeine. Doses of 0.06 Gm. (1 grain) may be given as necessary. However, 0.06 Gm. (1 grain) of codeine is not twice as effective as 0.03 Gm. ($\frac{1}{2}$ grain), and it is probably better to give the smaller amount more frequently.

If the drugs which have been mentioned are used judiciously it may never be necessary to call on the more powerful narcotics. Morphine is the cheapest and by far the most useful of this group. The oral administration of 0.008 Gm. ($\frac{1}{8}$ grain) is of little more value than codeine 0.03 Gm. ($\frac{1}{2}$ grain). It is usually necessary to give 0.010 Gm. ($\frac{1}{6}$ grain) or often 0.016 Gm. ($\frac{1}{4}$ grain) every three or four hours to relieve severe pain. Lesser amounts are required if hypodermic injections are used, as has been stated previously.

Morphine is habit forming and must be administered with care. Habituation is not easily cured. It tends to cause constipation and may result in nausea and vomiting; sometimes patients who take the drug complain of itching.

Morphine not only relieves pain but is a hypnotic and produces sleep. It should not be given for the latter effect if other drugs can be used.

"Pantopon hydrochloride" (the total alkaloids of opium as soluble hydrochloride) has nearly the same effect as morphine but fewer side effects. It is useful in those patients who are susceptible to morphine and is given in doses of 0.01 Gm. ($\frac{1}{10}$ grain) to 0.02 Gm. ($\frac{1}{5}$ grain).

Dihydromorphinone hydrochloride ("dilaudid hydrochloride" N. N. R.⁵) has certain advantages over morphine. The dosages are approximately one fifth those of morphine—0.0025 Gm. ($\frac{1}{24}$ grain) by mouth or 0.002 Gm. ($\frac{1}{32}$ grain) subcutaneously. The drug produces less hypnosis than does morphine, and a barbiturate may be required to produce sleep. There is less gastrointestinal distress, but the drug is a depressant to the respiratory system and causes more itching. It is not a good substitute for morphine once the latter has been used.

Meperidine hydrochloride ("demerol hydrochloride" N. N. R.) is a recently introduced narcotic which has a definite place with some patients. It has few side effects but is as habit forming as the others. It is used in 0.05 to 0.1 Gm. doses hypodermically.

Methyldihydromorphinone hydrochloride ("metopon hydrochloride") has recently been announced as a new narcotic for dealing with pain in cancer patients. Its use is still in the experimental stage, and I have had but little experience with it.

Heroin (diacetylmorphine) should be mentioned only to say that it has no place in the treatment of this type of case.

There are many drugs that are beneficial in the production of sleep and relaxation. Acetylsalicylic acid will help many patients. Phenobarbital, sodium pentobarbital, chloral hydrate, paraldehyde and bromides all have their place.

TREATMENT OF ULCERATED LESIONS

Certain cancers of the skin or near the surface of an organ may become ulcerated as a result of inadequate blood supply to the new cells. Necrosis and sloughing occur with a resulting bad odor. There is nothing contagious as far as the cancer is concerned in these ulcerations, but there is nearly always secondary infection. Surgical principles hold here as elsewhere. Discharge from an infected cancerous ulcer calls for the same care as that from an infected finger. Members of a family often ask whether it is necessary to boil the dishes and the clothing used by the cancer patient. They are told that the same care should be used as for any infection and that it is not necessary to boil dishes.

It is this secondary infection that causes so much pain in ulcerated cancers. It is amazing to note how much the patient is benefited by careful attention to clearing up these infections. Wet dressings of saline solution, chlorinated soda, Dakin's solution (sodium hypochlorite) or one of the protein solvents help to remove the necrotic tissue and reduce the infection. Dressings should be changed several times a day or as often as they become soiled. Gross necrotic tissue should be excised or picked off the lesion. If the infection is bad and not easily controlled the sulfonamide drugs or penicillin may be used.

RADIATION THERAPY

Radiation therapy offers palliation chiefly in cancer of the skin, mouth, breast and uterus. Sometimes far advanced cancers of the skin can be cured or retarded

4. Himmelsbach, C. K.; Andrews, H. L.; Felix, R. H.; Oberst, F. W., and Davenport, L. F.: Studies in Codeine Addiction, Pub. Health Rep., 1940, supp. 158, pp. 1-67.

5. Nathanson, I. T., and Daland, E. M.: The Use of Dilaudid in Treating Patients with Cancer, New England J. Med. 213: 741-746, 1935.

for years by properly administered irradiation, preferably roentgen therapy. Treatment thought to be palliative may turn out to be curative. Here, as in other types of cancer, the first assault is the most important, and once it fails there is little likelihood of much benefit. Ulcerated, bleeding cancer of the breast, considered too extensive for operative therapy, may be reduced in size and sometimes destroyed by irradiation. The benefit is usually temporary, but it may be many months before recurrence appears.

Bleeding from advanced cancers of the cervix and endometrium may be controlled for many months by roentgen therapy. In some instances the extent of roentgenologic destruction of the primary lesion is so great that further treatment directed toward cure can be given.

Many patients with inoperable metastases to the lymph nodes from the skin, mouth, breast and other organs are given radiation treatment with an attempt at palliation. Unfortunately, these metastatic nodes are not nearly as sensitive to radiation as the primary lesions, and little benefit may result. Since one cannot predict in which case benefit will occur, this method of treatment is advocated for all such patients. Somebody has made the remark that "the only incurable case is the one that has not been cured," thus suggesting that a trial of all appropriate forms of treatment is in order.

Radiation therapy may result in relief from pain in other than ulcerated lesions. Pain from osseous metastases may be relieved for long periods by a minimum of treatment. I have repeatedly observed relief from this type of pain after one or two treatments or within forty-eight hours. Pain from osseous metastases from cancer of the breast and prostate is more apt to be relieved than other types, although radiation therapy is worth trying in pain from other types of metastases to bone, as in cancer of the ovary, kidney and rectum.

Irradiation has little selective action on cancer of the stomach, intestine, rectum or pancreas. The amount of therapy required to show any effect on such lesions is so great that the patient cannot tolerate it.

RELIEF OF OBSTRUCTION

Indications for Operative Therapy.—Even though the cancer is incurable one must not lose sight of the fact that relief of obstruction may afford the patient great relief. However, it must be made certain that the attempt to give palliation does not increase the discomfort of the patient. Prolongation of life if pain cannot be relieved or if new troubles are produced does not answer the definition of the word palliation.

In operative treatment for abdominal cancer the presence of metastases in lymph nodes or in the liver should not deter the surgeon from resecting the primary lesion if it is technically removable. This applies to cancers of the stomach, of the bowel, and in particular of the rectum.

Tracheotomy.—There is no more gruesome thing in medical practice than to see a patient strangle to death from an obstructing lesion of the larynx. Tracheotomy should be performed as soon as the patient manifests early signs of stridor, cyanosis or distress. The operation can be performed with the patient under local anesthesia with ease, provided that the surgeon has not waited until the patient is moribund.

Gastrostomy.—Gastrostomy should be performed only after careful study. This operative procedure should be

reserved for obstruction of the pharynx, esophagus or cardia. It is never worth while in cancer of other parts of the stomach. If a man cannot swallow the same amount of concentrated liquid food that would be instilled into a gastrostomy tube, operative treatment should be considered. However, there should be a life expectancy of a few months or the operation will not be worth while. One should also decide how the patient will accept this new regimen and whether he will actually be happier with it. A gastrostomy will not give relief to the troublesome salivation and discharge from the primary lesion. There may be leakage from the opening which will cause discomfort. Frequent feedings are a great deal of trouble.

Colostomy.—Miles⁶ once wrote about the "kindly colostomy." Some colostomies may answer that description but others do not. Colostomy will give relief from an obstructing lesion of the rectum or sigmoid. It will not relieve symptoms of tenesmus, especially if the lesion is close to the sphincter, and it may have but little effect on bleeding. There will be little if any actual prolongation of life from this operation.

The best type of colostomy is performed by delivering a loop of sigmoid through the abdomen at the outer border of the left rectus muscle and by suturing the peritoneum, fascia and skin beneath the loop. Later the loop should be completely divided to prevent spilling over into the distal loop.

The patient can be taught to control the action of the colostomy by diet and by daily enemas. There is no necessity for wearing a colostomy bag if careful attention is given to a daily movement; nearly all my patients wear a small gauze pad and report that they have no difficulty with leakage during the day.

Gastric Operations.—It is not always possible to determine without operative study whether or not a cancer of the stomach is resectable. When the cancer is demonstrated roentgenologically and because a particularly large mass is palpable, some physicians will decide that an exploratory operation is inadvisable. However, it has been my experience that lesions of this type are as often resectable as not, for the low position and mobility of the mass makes it possible to palpate it. Any resectable mass should be removed even in the presence of irremovable nodes or metastases in the liver, as this will give many months of comfort.

It is a well established fact that neither anterior nor posterior gastroenterostomy is a satisfactory operation for obstructing cancer of the stomach. In many instances the stomach does not function, and when it does it is for a short time only, as the cancer quickly encroaches on the anastomosis.

Occasionally it is possible to transect the stomach above the growth. A Polya or Hofmeister anastomosis is performed, and the distal end of the stomach is closed with a double row of sutures. This is a satisfactory operation, for the anastomosis functions well and growth of the cancer may be retarded. The patient may be entirely relieved of his symptoms and may live many months. It should be pointed out here that a biopsy should be made wherever possible to establish absolute proof of the diagnosis. I recall 2 patients examined recently, in whom this operation was performed five years previously and in whom the nodes removed were reported as inflammatory. Obviously, the diagnosis was ulcer and not cancer, and the patients are well.

6. Miles, W. E.: Some Phases of Rectal Cancer: Cancer Symposium, Philadelphia, Clinical Congress of American College of Surgeons, Oct. 12, 1930.

Cystostomy.—Permanent cystostomy for relief of obstruction from cancer of the prostate is not required as often as it was a few years ago, because transurethral resection may accomplish as much. However, there is a definite place for this operation especially as an emergency measure.

Intestinal Short Circuits.—Whenever a malignant neoplasm encountered in the small or large intestine cannot be resected, any possible short circuit should be performed. This may be an enteroenterostomy, an ileocolostomy, an ileosigmoidostomy or more rarely a colocolostomy.

It should be emphasized that in advanced cancer of the rectum or a lesion which has already metastasized to the liver an abdominoperineal resection should be performed if the primary lesion can be resected. This will give excellent palliation; I recall 1 patient who survived four years.

Relief from Cancer of the Pancreas and Duodenum.—Much relief can be given a patient with jaundice due to cancer of the head of the pancreas or duodenum by performing an anastomosis between the distended gall-bladder and either the stomach or the duodenum, preferably the latter. The jaundice may clear up entirely, digestion may be improved and the itching may be relieved.

CASTRATION THERAPY

In the latter part of the nineteenth century Beatson⁷ noted that if the ovaries were removed from patients with an advanced stage of cancer of the breast there sometimes was regression of the disease. The operation was tried by many surgeons with variable success and was abandoned by many. In 1931 I reported the case⁸ of a patient at the Pondville Hospital with extensive osseous metastases from cancer of the breast. There was decided regeneration of all her bones following a small series of roentgen treatments to her pelvis for relief of pain. It was noted also that this patient stopped menstruating after the treatments, and it was believed that ovarian activity had been destroyed by the radiation. In a second patient being treated with colloidal lead at the Massachusetts General Hospital there was observed regeneration of the bones of the pelvis, spine and skull. At first the lead was given the credit, but later it was discovered that she had also received radiation therapy to the pelvis for pain and that she too had ceased to menstruate. Thus the one factor in common in the 2 cases was irradiation of the ovaries, and this appeared significant. A large number of patients were then given radiation therapy to the ovaries, and it was reported by Dresser and Pelletier⁹ that about 30 per cent of those who had not had their menopause exhibited regeneration of bones and disappearance of metastatic deposits in the bones and lungs. Many writers have reported the same results. It is apparent that effective irradiation may accomplish the same results as the surgical castration of Beatson.

Huggins¹⁰ has given evidence that definite regression of cancer of the prostate may occur if the testes are

removed. This operation has come to be a standard procedure in inoperable and recurrent cancer of this organ. Not only does the primary cancer regress, but frequently osseous metastases disappear temporarily and pain is promptly relieved. The general condition of the patient improves greatly.

HORMONAL THERAPY

Huggins¹¹ has demonstrated that estrogens given to the patient with cancer of the prostate will in many instances produce the same relief from symptoms and retardation of growth as does castration. Many urologists carry out both procedures as soon as a diagnosis of irremovable cancer of the prostate is made. Others perform castration and later give estrogens, usually diethylstilbestrol. All this treatment gives only temporary relief, and after a few months or a very few years control is lost and the patient dies of cancer.

The use of hormonal therapy in cases of advanced cancer of the breast has aroused a great deal of interest and curiosity. It has been observed that some patients are benefited by estrogens (female sex hormones) while others receive relief from androgens (male sex hormones). In some instances one type of therapy has produced results after the other has failed.

Nathanson¹² has stated that cancer of the breast untreated by other means and recurrent nodules of cancer of the breast manifest a tendency to shrink up and disappear on diethylstilbestrol therapy in many instances. Microscopic analyses prove that the cancer nodules are actually destroyed. Ulcerated lesions exhibit epithelial repair and healing of the ulcer. Lesions of the soft tissue are affected to a greater degree than are lesions in bone. In some cases the osseous metastases have progressed while those of soft parts have disappeared. These results all seem to be temporary, and there have been no cures. Nathanson's most satisfactory results were in patients over 60 years of age.

Loeser¹³ and Ulrich¹⁴ in 1939 called attention to the effect of testosterone propionate in the treatment of advanced carcinoma of the breast. Adair and Hermann¹⁵ reported that benefit was received by 4 of 11 patients treated with this drug. Three of the 4 were patients with osseous metastases, and 1 had involvement of soft parts only. Roentgen examinations revealed an increase in calcification in the bones coincident with relief from pain.

Adair¹⁶ has stated that "testosterone may be employed on female patients with breast cancer at any age, while the estrogen therapy must be strictly confined to patients of 60 years and older." Nathanson¹⁷ has suggested that "testosterone therapy may be akin to premenopausal ovariectomy, in that the androgens may inhibit the estrogens directly or ovarian function via the anterior pituitary."

These results from hormonal therapy are exceedingly interesting and important. For the first time medica-

11. Huggins, C.: Endocrine Control of Prostatic Cancer, *Science* **97**: 541-544, 1943.

12. (a) Nathanson, I. T.: Effect of Stilbestrol on Advanced Cancer of the Breast, *Cancer Research* **6**: 484, 1946; (b) Hormonal Alteration of Advanced Cancer of the Breast, *S. Clin. North America*, 1947, p. 1144.

13. Loeser, A.: Male Hormone in the Treatment of Cancer of the Breast, *Acta Union internat. contre cancer* **4**: 375, 1939.

14. Ulrich, P.: Testosterone et son rôle possible dans le traitement de certains cancers du sein, *Acta Union internat. contre cancer* **4**: 377, 1939.

15. Adair, F. E., and Hermann, J. B.: The Use of Testosterone Propionate in the Treatment of Advanced Carcinoma of the Breast, *Ann. Surg.* **123**: 1023-1035, 1946.

16. Adair, F. E.: The Use of the Male Sex Hormone in Women with Breast Cancer, *Surg., Gynec. & Obst.* **84**: 719-722, 1947.

17. Nathanson, I. T.: Hormones in Relation to Tumors in the Female, in Meigs, J. V., and Sturgis, S. H.: *Progress in Gynecology*, New York, Grune & Stratton, Inc., pp. 161-162.

7. Beatson, G. J.: On the Treatment of Inoperable Cases of Carcinoma of the Mamma: Suggestions for a New Method of Treatment, with Illustrative Cases, *Lancet* **2**: 104 and 162, 1896.

8. Daland, E. M.: An Analysis of Cases at the Pondville Hospital During Its First Two Years, *Am. J. Cancer* **15**: 2366, 1931; A Further Report, *ibid.* **21**: 646, 1934.

9. Dresser, R., and Pelletier, V. A.: The Radiological Management of Cancer of the Breast, *New England J. Med.* **214**: 720-723, 1926.

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ments given by the oral route (diethylstilbestrol) and by intramuscular injection (testosterone propionate) have actually exhibited microscopic evidence of their effect on cancer. This form of therapy thus far is only palliative, but it opens the way for important research directed toward permanent benefit.

NEUROSURGICAL MEASURES

The neurosurgeon has much to offer the cancer patient. When the pain is severe and unendurable it is sometimes possible to interrupt the neural paths of pain by various procedures. Since pain may be referred to adjacent areas, a careful study is necessary to determine which nerve or nerves are actually involved.

Injections of the second and third branches of the fifth nerve with alcohol have been performed for many years. Seldom do they produce complete or permanent relief, for, as stated by Hodgson,¹⁸ the disease may involve adjacent areas which are innervated by other nerves as well as the fifth.

Subarachnoid injections of alcohol are often of benefit for pain in the rectum, pelvis, sacrum and coccyx. The injection of 0.5 to 0.7 cc. of 95 per cent alcohol is given into the third or fourth lumbar space with the patient's hips elevated and the painful side uppermost. If the injection is successful relief occurs quickly but is frequently only transient.

Chordotomy is an operative measure in which the spinothalamic tract, the pain fiber tract, is divided in the anterolateral portion of the spinal cord. This operation is technically difficult and requires a well trained surgeon to perform it. In carefully selected patients relief from pain below the navel can usually be given. Complications from the operation are not uncommon and consist of urinary retention, decubitus ulcers and motor weakness of the extremities.

Rhizotomy or posterior root section may be performed for pain in the neck, lower part of the scalp and face with fairly good results.

Other procedures for relief of pain in patients with advanced cancer are intramedullary section of the fifth nerve tract, myelotomy, presacral nerve section and prefrontal lobotomy.

The operation known as "prefrontal lobectomy," which consists of the severance of the neuronal connections between the thalamus and the anterior part of the frontal lobes on both sides of the brain, was first devised by Egas Moniz¹⁹ and reported at the Second International Neurological Congress in London in 1935. Moniz found it useful in the treatment of certain chronic psychotic states which had been refractory to other forms of treatment. Freeman and Watts²⁰ introduced the operation in this country and established its usefulness in chronic depressions, especially agitated depressions; in severe chronic anxiety states, and particularly in severe chronic obsessive-compulsive states. Mixter and his co-workers,²¹ using a modified lateral approach,

confirmed Freeman's and Watts's results in agitated depressions.

Poppen,²² who greatly improved the precision of the operation by introducing an open approach which allowed guidance by the anatomic landmarks of the brain rather than merely by those of the skull, which had been used heretofore, recommended use of the operation for the treatment of intractable pain and reported a successfully treated case. Freeman and Watts²³ likewise reported successful control of unbearable pain by this operation. While prefrontal lobotomy does not reduce sensory and pain thresholds for external stimuli applied to the skin, it does divert deep internal pain of its harrowing and threatening quality. The patient still has pain, but it is meaningless.

I have had no experience with patients subjected to this operation, but I believe that the operation has a definite place in certain cases of intractable pain that cannot be relieved by other means.

SUMMARY

1. There is much that can be done for the patient with advanced cancer. He should be given the benefit of as radical an operation as can be performed safely, always with the hope that cure can be accomplished or, failing this, that palliation may be given.
2. Radiation treatment may be curative in many types of superficial cancer and palliative in advanced cancer of certain organs.
3. Medicaments should be prescribed in such a way that an adequate amount is given, but never more than the amount of pain warrants. Avoidance of an excess of narcotic drugs is the prevention of drug addiction.
4. Surgical relief of obstruction, neurosurgical measures for combating pain, castration therapy and the administration of male and female sex hormones all have a place in the treatment of this group of patients.

22. Poppen, J. L.: Prefrontal Lobotomy for Intractable Pain: Case Report. *Lahey Clin. Bull.* 4: 203-207, 1946.

23. Freeman, W., and Watts, J. W.: Prefrontal Lobotomy for the Relief of Unbearable Pain. *Lancet*, to be published; cited in *Tr. Am. Neurol. A.* 71: 153, 1946.

18. Hodgson, J. S.: *The Relief of Pain by Neurosurgical Methods, in Cancer: A Manual for Practitioners*, Boston, Rumford Press, 1940, pp. 253-258.

19. Moniz, E.: Les possibilités de la chirurgie dans le traitement de certaines psychoses. *Lisboa méd.* 13: 141, 1936.

20. Freeman, W., and Watts, J. W.: Prefrontal Lobotomy in the Treatment of Mental Disorders. *South M. J.* 30: 23-31, 1937. Watts, J. W., and Freeman, W.: Surgical Aspects of Prefrontal Lobotomy. *J. Internat. Coll. Surgeons* 5: 233-240, 1942. Freeman, W., and Watts, J. W.: *Psychosurgery*, Springfield, Ill., Charles C Thomas, Publisher, 1942; Prefrontal Lobotomy: Survey of Three Hundred and Thirty-One Cases. *Am. J. M. Sc.* 211: 1-8, 1946.

21. Mixter, W. J.; Tiltzson, K. J., and Wies, D. D.: Frontal Lobotomy in Two Patients with Agitated Depression, with Therapeutic Evaluation and Further Reference to Frontal Lobe Function. *J. Nerv. & Ment. Dis.* 92: 84-87, 1940.

The Jubilee of the Electron.—Professor J. J. Thomson, in 1897 working in the Cavendish Laboratory at Cambridge, discovered that cathode rays consist of negatively charged particles (electrons, as they came to be known) many times smaller in size than the smallest atoms known. During the fifty years that have elapsed since that discovery, it has been established that electrons form an essential part of all matter. To mark the jubilee of the discovery of the electron, celebrations were held recently in London by the Institute of Physics and the Physical Society Engineers in collaboration with the Institution of Electrical Engineers. On the afternoon of Sept. 25, 1947, at the Royal Institution, Professor J. A. Crowther gave a lecture on the history and early development of the discovery. He was followed by Professor R. E. Peierls, who spoke on electrons in modern theoretical physics. In the evening a public lecture was delivered to a very large nontechnical audience at the Central Hall, Westminster, by Sir Clifford Paterson, director of the Research Laboratories of the General Electric Co., Ltd., on "The Electron Liberated." On the following day the Electron Jubilee Exhibition at the Science Museum, South Kensington, was formally opened. At the Institution of Electrical Engineers, a posthumous portrait of Sir J. J. Thomson painted by Mr. Francis Hodge, was unveiled by "J. J.'s" son, Sir George Thomson, who then addressed the assembly on the electron in research.—Jubilee of the Discovery of the Electron, *Nature*, December 1947.

Clinical Notes, Suggestions and New Instruments

FATAL REACTIONS TO INTRAVENOUS ADMINISTRATION OF AMINOPHYLLINE

Report of Three Cases

ELLIOTT BRESNICK, M.D.
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and
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Brookline, Mass.

Aminophylline (theophylline ethylenediamine) has received widespread acceptance as a bronchodilator in the treatment of both bronchial and cardiac asthma,¹ as a diuretic in cardiac congestive failure² and as a coronary vasodilator in the treatment of coronary occlusion³ and angina pectoris.⁴ Because of its irritating action on the gastrointestinal tract, its therapeutic effectiveness by mouth, even in enteric-coated capsules, is limited.⁵ In bronchial asthma, in fact, it cannot be tolerated by mouth in doses large enough to relieve bronchospasm, whereas, when it is administered intravenously, the effect is usually prompt and satisfactory.¹ The intravenous route has therefore come to be the method of choice whenever the urgency of the situation demanded prompt and effective action. Particularly has this been true in the treatment of acute myocardial infarction.

There have been only a few reports of toxic effects from aminophylline administered intravenously. A review of the literature discloses but 3 fatal cases, all cited by Merrill.⁶ One of these was of a man of 52, who was under treatment for acute myocardial infarction. He died suddenly during the injection, when only 0.1 Gm. of aminophylline had been introduced into the vein. The second case was of a man of 70, who had acute cardiac decompensation. (The dose is not mentioned.) The third case was of a man of 73 with hypertension, bronchiectasis and status asthmaticus, who died thirty seconds after the intravenous injection of 10 cc. (0.24 Gm.) of aminophylline.

We present 3 more fatal reactions following the use of aminophylline intravenously.

REPORT OF CASES

CASE 1.—E. G., a 74 year old white man, was admitted to the third medical service Oct. 7, 1946 because of pain in the chest of nine hours' duration. He had experienced typical episodes of coronary occlusion six years and again three weeks

From the First and Third (Tufts) Medical Services, Boston City Hospital, and the Department of Medicine, Tufts College Medical School. Charlton Research Fellow, Tufts College Medical School, and Volunteer Assistant in Medicine, Boston City Hospital, (Dr. Bresnick) and interns, First and Third Medical Services, Boston City Hospital (Dr. Woodard and Dr. Sageman).

Helpful criticisms and suggestions were made by Dr. James M. Faulkner, Professor of Medicine, Tufts College Medical School, and Director of First and Third Medical Services, Boston City Hospital. Dr. Faulkner has since become Dean of Boston University School of Medicine.

* 1. Greene, J. A.; Paul, W. D., and Feller, A. E.: The Action of Theophylline with Ethylenediamine on Intrathecal and Venous Pressures in Cardiac Failure and on Bronchial Obstruction in Cardiac Failure and in Bronchial Asthma, *J. A. M. A.* **109**: 1712-1715 (Nov. 20) 1937. Barach, A. L.: The Treatment of Bronchial Asthma and Other Chronic Pulmonary Diseases Accompanied by Constriction in the Bronchial Passageway, *M. Clin. North America* **28**: 339-345 (March) 1944.

* 2. Boyer, N. H.: Aminophylline and Related Xanthine Derivatives: Present Status of Therapeutic Claims, *J. A. M. A.* **122**: 306-309 (May 29) 1943.

* 3. Smith, F. M.; Rathe, H. W., and Paul, W. D.: Theophylline in Treatment of Disease of the Coronary Arteries, *Arch. Int. Med.* **56**: 1250-1262 (Dec.) 1935. Mokotoff, R., and Katz, L. N.: Effect of Theophylline with Ethylenediamine (Aminophylline) and of Papaverine Hydrochloride on Experimental Myocardial Infarction in Dogs, *Am. Heart J.* **30**: 215-230 (Sept.) 1945.

* 4. Brown, M. G., and Riseman, J. E. F.: Comparative Value of Purine Derivatives in Treatment of Angina Pectoris, *J. A. M. A.* **109**: 256-258 (July 24) 1937.

* 5. Evans, W., and Hoyle, C.: Comparative Value of Drugs Used in Continuous Treatment of Angina Pectoris, *Quart. J. Med.* **2**: 311-338 (July) 1933. Gold, H.; Kirt, N. T., and Otto, H.: The Xanthines (Theobromine and Aminophylline) in the Treatment of Cardiac Pain, *J. A. M. A.* **108**: 2173-2179 (June 26) 1937. Master, A. M.; Jaffe, H. L., and Dack, S.: The Drug Treatment of Angina Pectoris Due to Coronary Artery Disease, *Am. J. M. Sc.* **197**: 774-782 (June) 1939.

* 6. Merrill, G. A.: Aminophylline Deaths, *J. A. M. A.* **123**: 1115 (Dec 25) 1943; correction, *ibid.* **124**: 250 (Jan. 22) 1944.

before entry and had received digitalis, 0.1 Gm. daily, since the last one. On the day of entry he was awakened in the morning from a sound sleep by a severe, crushing substernal pain, radiating over the entire chest and down both arms, and accompanied by severe dyspnea and orthopnea.

Physical examination revealed a moderately cyanotic, thin, elderly man in respiratory distress, with cold, clammy skin. Pulse and blood pressure were unobtainable. The apical heart rate was 120 per minute. Heart sounds were muffled, and a protodiastolic gallop could be heard at the apex. Both pulmonary fields were entirely filled with moist, bubbling rales. Oxygen was administered immediately through a nasal catheter. Caffeine and nikethamide administered intravenously seemed to effect slight improvement in his general appearance. Aminophylline, 7½ grains (0.48 Gm.) in 20 cc., was started intravenously. After 15 cc. (0.36 Gm.) had been injected at a "slow" but unmeasured rate, the patient suddenly gasped and became livid. He clutched at his chest and gasped for air. The needle was immediately withdrawn. The patient stiffened and had two brief generalized convulsions. The heart sounds at this time could not be heard. He then became limp. Artificial respiration and intracardiac injection of epinephrine failed to revive him, and he was pronounced dead twenty-five minutes after arrival on the ward.

CASE 2.—J. Z., a 54 year old white man, entered the third medical service Oct. 16, 1946 because of crushing substernal pain of one hour's duration. He was apparently in perfect health until one hour prior to entry when, while sitting quietly at work, he was suddenly seized with a "smothering" sensation beneath the sternum. He became apprehensive and covered with cold perspiration. The smothering sensation gradually changed to a crushing, substernal, nonradiating pain. With this he felt extremely short of breath. He was then rushed to the hospital.

He was a slightly obese, cold, cyanotic, middle-aged man, perspiring profusely. Pulse and blood pressure could not be obtained. Heart sounds were distant and the rate was 120 per minute. Rhythm was regular. The heart did not appear clinically to be enlarged. There were fine, moist rales at both bases. An electrocardiogram taken soon after entry showed changes consistent with an acute anterior myocardial infarction. He was given oxygen by nasal catheter, atropine, ½₁₀₀ grain (0.06 mg.) and merperidine hydrochloride, 100 mg. intramuscularly. After receiving papaverine, 1 grain (60 mg.), intravenously, he appeared more comfortable, the radial pulse could be felt, and the general picture appeared much more encouraging, although the blood pressure was still unobtainable. Intravenous injection of aminophylline, 7½ grains (0.48 Gm.) in 20 cc., was begun at a "slow" but unmeasured rate. After 10 cc. (0.24 Gm.) had been injected, the patient suddenly clutched at his chest and gasped, becoming deeply cyanotic. The needle was immediately withdrawn from the vein. He continued to gasp spasmodically, using all accessory muscles of respiration, and a white froth appeared on his lips. Heart sounds at this time could not be heard, and the pulse was again unobtainable. Gasping inspiratory movements continued, at ever increasing intervals up to forty-five seconds, for approximately five minutes. During this period there were three very brief generalized convulsions. In the meantime artificial respiration was maintained, and 1 cc. of 1:1,000 epinephrine was injected into the heart without benefit. Resuscitation measures were discontinued, and the patient was pronounced dead one hour and fifteen minutes after arrival on the ward.

CASE 3.—E. M., 31 year old Italian housewife, was admitted on May 31, 1946 to the first medical service for the fourth time since August 1945. Each admission was due to uremia on the basis of chronic pyelonephritis, accompanied by severe anemia, albuminuria and a fixed urinary specific gravity. On her final admission the findings were essentially the same, with nonprotein nitrogen climbing from 186 to 283 mg. and carbon dioxide-combining power remaining at 19 to 23 volumes per cent despite intravenous administration of lactate.

Shortly after entry a pericardial friction rub became audible and steadily increased in intensity. Uremic frost soon appeared on her skin. Peripheral edema increased, and on the second hospital day acute pulmonary edema developed. It was felt

that rapid digitalization might afford temporary relief. (She had had no previous digitalis.) Aminophylline, $7\frac{1}{2}$ grains (0.48 Gm.) in 20 cc., was mixed with 1 cc. (0.65 mg.) of strophanthin. This mixture was injected "slowly" although not at a measured rate, into the left antecubital vein. After approximately 5 cc. (0.11 Gm. of aminophylline and 0.15 mg. of strophanthin) had been injected, the patient's eyes rolled upward, her left arm began to twitch spasmodically, and she progressed into a generalized convulsive seizure of short duration. At this time no pulse could be felt or heart sounds heard. Her entire body remained rigid thereafter, and despite artificial respiration, about one minute later respirations also ceased.

COMMENT

It is to be emphasized that in all of these occasions the intravenous injection of aminophylline was associated with sudden exitus in patients who were not moribund at the beginning of the injection. All had previous evidence of coronary disease or severe myocardial damage with failure. The mode of death suggested cardiac standstill or ventricular fibrillation. It is recognized⁷ that aminophylline has a direct stimulating effect on the myocardium, that it increases cardiac work and that it is a coronary vasodilator. The question has been raised⁸ whether the coronary vasodilating effect of aminophylline is simply a response to increased metabolic demands of the myocardium comparable to the reaction to epinephrine. Even if increased metabolic requirements are not the only factor by which aminophylline produces coronary vasodilatation, if the coronary arteries are incapable of dilating sufficiently to keep pace with the enhanced metabolic demands, any drug which stimulates the myocardium may precipitate coronary insufficiency. In the presence of occlusive coronary disease such a drug might favor the development of ectopic arrhythmias such as is observed, for example, after the injection of epinephrine. Merrill,⁹ in commenting on his experiences with intravenous administration of aminophylline, stated that "the suddenness of the death resembles that seen when epinephrine hydrochloride has been given undiluted intravenously, in which case death has been due to ventricular fibrillation."

The fact that the sudden death occurring in association with the intravenous injection of organic mercurial-theophylline compounds appears to be due to ventricular fibrillation⁸ raises the interesting question whether the theophylline component could be the exciting factor in provoking abnormal ventricular irritability. However, clinical experience has shown that sudden death may occur with intravenous injection of organic mercurials not containing theophylline,¹⁰ and experimental observations on cats¹¹ indicate that adding theophylline to an organic mercurial does not appear to enhance its effect on ventricular irritability.

The total dose of aminophylline administered does not seem to be important, within therapeutic limits, the fatal dose having varied from 0.1 Gm. to 0.36 Gm. It is quite possible that the speed of injection is more important. It has been repeatedly observed that too rapid intravenous injections of aminophylline may evoke toxic symptoms referable to the central nervous system (hyperpnea, vertigo, faintness).⁹ In the 3 cases cited in this paper the injections were not timed with a watch although the interns who gave them stated that they were given "slowly."

7. Starr, I.; Gamble, C. J.; Margolies, A.; Donal, J. S., Jr.; Joseph, N., and Eagle, E. A.: A Clinical Study of the Action of Ten Commonly Used Drugs on Cardiac Output, Work and Size; on Respiration, on Metabolic Rate and on the Electrocardiogram, *J. Clin. Investigation* 16: 799-823 (Sept.) 1937. Boyer, N. H., and Green, H. D.: The Effects of Nitrites and Xanthines on Coronary Inflow and Blood Pressure in Anesthetized Dogs, *Am. Heart J.* 21: 199-214 (Feb.) 1941.

8. (a) Volini, J. F.; Levitt, R. O., and Martin, R.: Studies on Mercurial Diuresis: Sudden Death Following Intravenous Injection; Report of Three Cases, with *Postmortem Findings* in Two, *J. A. M. A.* 128: 12-17 (May 5) 1942. Lindberg, H. A., and Diuretics, *ibid.* 119: 1001-1004 (July 25) 1942. C., and Nadler, J. E.: Review of Toxic Manifestations of Mercurial Diuretics in Man, *ibid.* 119: 1006-1011 (July 25) 1942. (c) DeGraff, A. C., and Lehman, R. A.: The Acute Toxicity of Mercurial Diuretics, *ibid.* 119: 998-1001 (July 25) 1942.

9. Luduena, F. P.: Bronchial Antispasmodic Actions of Theophylline Derivatives, Including Effects of Continued Administration, *J. Pharmacol. & Exper. Therap.* 75: 316-327 (Aug.) 1942. Barach, A. L.: Rectal Intubation of Aminophylline in Intractable Asthma, *J. A. M. A.* 128: 589 (June 23) 1945.

If aminophylline were a dangerous drug to give intravenously, one would have expected more reports of disasters attending its use. Allergists who have used it freely for years in the treatment of bronchial asthma report no serious toxic reactions to it. Our experience may mean, however, that in the presence of coronary disease an additional hazard is present which necessitates caution and very slow injection.

SUMMARY

Three cases of sudden death in association with the intravenous injection of aminophylline are reported. The possible mechanism of death is discussed.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports. HOWARD A. CARTER, Secretary.

FIBERGLAS-FILLED SLEEPYTIME PILLOW ACCEPTABLE

Manufacturer: The P. R. Mitchell Company, Spring Grove and Harrison Avenues, Cincinnati 22.

The Fiberglass-Filled Sleepytime Pillow is designed for the use of patients who are allergic to feathers and other materials that might ordinarily be used in stuffing pillows. The material used in the present case is essentially glass in the form of fibers about 2 microns in average diameter. Fibers of this thickness

or less under these conditions do not break easily and are extremely resilient. The latter fact is conveniently demonstrated by the ease with which the pillow fluffs up and returns to its original size when shaken. The resistance of the fibers to fracture under these conditions was demonstrated by a test in which a bowling ball (weight, 7.5 Kg.; diameter, 20 cm.) was allowed to fall on the pillow some 50,000 times. Afterward, comparison of the contents of the pillow with untested controls showed no appreciable difference between them.

The investigator for the Council reported that the pillows were well made, that the ticking was of good quality and that the amount of filling seemed to be right for a patient's comfort.

The Council voted to include the Fiberglass-Filled Sleepytime Pillow in its list of accepted devices.

EMERSON LUNG IMMOBILIZING CHAMBER ACCEPTABLE

Manufacturer: J. H. Emerson Company, 22 Cottage Park Avenue, Cambridge, Mass.

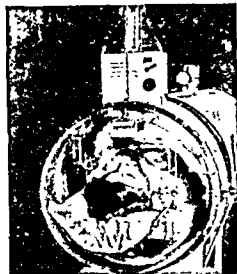
The Emerson Lung Immobilizing Chamber is essentially a horizontal, cylindrical chamber, large enough to enclose a human adult completely and equipped with a pump that applies alternating positive and negative pressures to the entire body. Although at first sight similar to the tank type of respirator, it operates on a radically different principle developed by Barach.

To illustrate this principle one may imagine an open bottle standing under a large bell jar; if air is removed from the bell jar, the air in the bottle participates in the expansion of the air outside the bottle, and there is a movement of air outward through the neck of the bottle. In the same way, if the human subject is entirely inside the chamber, pumping some of the air out of the chamber must result in the expansion of the air in the patient's lungs and there must follow a movement of air outward through the patient's trachea. When air is readmitted to the chamber, especially under positive pressure, there will be some compression of the air in the patient's lungs and an inward movement of air through his trachea. These movements of air in and out of the patient's lungs need not be accompanied

by movements of either the diaphragm or the thoracic wall if the alternations of pressure are sufficiently slow. If the alternations are fast, however, certain dynamic factors have to be taken into account in order to hold the diaphragmatic and thoracic movements in abeyance. The Emerson Lung Immobilizing Chamber is designed to do this by timing the pressure changes on successive parts of the body; it thus solves the problem of making air move in and out of the patient's lungs while the lungs are actually motionless. It is assumed that immobilization promotes localization and healing of disease processes in the lungs.

The idea was commented on editorially in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, Feb. 2, 1946, page 281. The manufacturer claims only that when a patient is enclosed in it the device will provide alternating positive and negative pressures both at the nose and mouth and at the chest of the patient, amounting to about 55 mm. of mercury positive and 55 mm. negative, at about 25 cycles per minute. These positive and negative pressures arrive at the head region (nose and mouth) a fraction of a second before they arrive at the surface of the chest.

This delay is an essential feature of the apparatus and is achieved by means of a partition that separates the head compartment from the body compartment. Air from the motor-blower unit enters the head end of the chamber and has to pass through an adjustable opening at the level of the neck to reach the body compartment. In this way the pressure arriving at the inner surface of the chest wall and the upper surface of the diaphragm is made equal to that which is exerted on the outer surface of the thorax and abdomen. The difference in pressure needed to overcome resistance in the tracheobronchial tree, according to Barach, was found to be 4 to 10 cm. of water in the majority of cases of pulmonary tuberculosis. By delivering the air wave to the head end of the chamber before entrance into the body compartment, the application of pressure on each side of the chest wall is also made simultaneously. Observation of patients with pulmonary tuberculosis enclosed in a chamber of this type revealed no chest movement. This has been demonstrated by visual observation, moving pictures and x-ray of the chest during positive and negative phases of pressure.



Emerson Lung Immobilizing Chamber.

By adjusting the size of the opening between head and body compartments, it is possible to accommodate somewhat to variations in the resistance to the movement of air in the patient's respiratory passages. There is a limit to this, however, and it is stated that immobilization of the lung cannot be obtained in patients with bronchial asthma, pulmonary emphysema, pulmonary fibrosis, or in any case in which respiratory obstruction is present.

The apparatus worked well in the hands of a clinician who investigated it for the Council. One patient had marked claustrophobia and was much upset when he was placed in the chamber. In spite of reassurance, the man persistently got very excited while in the chamber, so that after a few trial treatments the investigator decided to discontinue them. In general, the investigation revealed that there is a sensation of complete relaxation, and this persists for some time after the patient leaves the chamber. As soon as the patient is disconnected from the chamber he promptly resumes spontaneous breathing. A study of the heart rate revealed that there is a definite slowing of the pulse rate of 10 to 15 beats per minute. The blood pressure shows a tendency to fall from 10 to 30 mm. of mercury pressure, and return to the original level within an hour after the treatment. Electrocardiographic studies of the heart before, during and after the treatment reveals no appreciable change, except an increase in the amplitude of the T wave after the treatment.

The chamber is air-conditioned by thermostatic control of temperature which can be regulated from the inside. Portholes are present that can be opened by the patient in the event that

the circulation of air stops through turning off of the electricity or other reason. The chamber is equipped with a talking device by which the patient may communicate to the outside or listen to the radio.

The Council on Physical Medicine voted to include the Emerson Lung Immobilizing Chamber in its list of accepted devices.

Council on Pharmacy and Chemistry

A STATEMENT

When the American Medical Association was reorganized in 1901 leaders of the profession recognized the responsibility it must assume to protect its members from misleading and, at times, dangerous medical advertising. In 1905 the Council on Pharmacy and Chemistry was formed; its members were charged with the establishment of a series of principles that would aid in differentiating between useful and useless drugs, between those sold with honest and dishonest claims; between those based on scientific evidence and those sold without such evidence.

By action of the House of Delegates, the advertising pages of *THE JOURNAL* were subjected to painstaking scrutiny; as a result many advertisements were deleted. The elimination resulted in considerable financial sacrifice. Editorially and by its actions *THE JOURNAL* wholeheartedly supported the principles established by the Council on Pharmacy and Chemistry.

As might have been expected, the Board of Trustees and other officers of the Association were bitterly attacked, criticized and condemned for this action that was motivated only by a desire to further medical progress. The General Manager and Editor of *THE JOURNAL*, Dr. George H. Simmons, was caricatured and subjected to vilification. Dr. Frank Billings was threatened with libel suits; some members of the Council were subjected to intimidation. Yet neither *THE JOURNAL* nor the officers of the Association wavered in their decision. Never once did any official of the Association attempt to make the Council deviate from the decisions it believed warranted.

With hearty appreciation the members of the Council record this acknowledgment of cooperation. At times decisions were made with the realization that their significance would not be fully apparent without careful study. The supporters of the Council, who now include a vast majority of the members of the Association, have shown no indication of a desire that it relax or relinquish its activities. Without this support the Council's work would have been much more arduous, perhaps some of it even impossible.

Until recently only two of the state medical journals, those of New York and Illinois, were not members of the Cooperative Medical Advertising Bureau which follows the standards established by the Council in its acceptance of advertising. More recently two others, California and Rhode Island have been added to the list of those that do not enjoy membership in the Cooperative Medical Advertising Bureau. This failure to maintain membership in the Bureau that follows Council standards is an action the Council greatly regrets, believing, as it must, that physicians who are members of the American Medical Association recognize the scrupulously judicious and scientific attitude with which it attempts to administer its obligation.

The Council on Pharmacy and Chemistry wishes to express its appreciation of the help afforded by the Board of Trustees, *THE JOURNAL* and other mutually interested units of the American Medical Association. Such unswerving assistance has been the nucleus of an understanding that has withstood all attacks in the past and must continue to do so in the future.

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SATURDAY, FEBRUARY 7, 1948

SCIENTIFIC MEDICAL ADVERTISING

On page 399 of this issue of THE JOURNAL appears an official statement by the Council on Pharmacy and Chemistry of the American Medical Association relative to the advertising in medical periodicals of products which have been considered by that Council. For almost fifty years the Council on Pharmacy and Chemistry has had the support of the House of Delegates of the American Medical Association, which has spoken with one voice as the representative body in American medicine to indicate that the vast majority of American physicians want to use pharmaceutical products of known composition sold without false, fraudulent or exaggerated claims. The Council was established in February 1905 and has served notably for the advancement of medical science and particularly for scientific therapy since that time. The position that it occupies in American medicine has been the envy of medical leaders in every country in the world. Its work has received the endorsement of governmental agencies engaged in similar efforts. In brief, the Council promotes basic or fundamental research on the use of new products and technics, evaluates the laboratory and clinical evidence offered on behalf of pharmaceutical products and encourages the use of rational therapeutics while discouraging the use of irrational preparations and technics.

Occasionally the work of the Council on Medical Education and Hospitals, the Council on Pharmacy and Chemistry and similar committees and councils comes into conflict with vested interests, private agencies and commercial organizations, which do everything possible to defeat its idealistic objectives. The rapid growth both in circulation and influence of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION has sometimes made it the target of attack of privately owned medical publications. Some of the publications of state medical societies found it difficult in the past to maintain their incomes because these publications, like THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, wished to meet the ethical standards which

were an integral part of the advancement of American medicine. From Dr. J. N. McCormack of Kentucky about 1910 the House of Delegates received a resolution urging the Board of Trustees to give every possible aid to the state medical journals to permit them to advance coincidentally with the national publications of the Association. As a part of this effort, the headquarters of the American Medical Association developed a system of sending to all of the state medical journals weekly abstracts of the original articles published in THE JOURNAL and also condensations of the actions of its official bodies and of the editorials in THE JOURNAL. From this effort ultimately developed the American Medical Association's news and press sheet, which is now being sent not only to all of the medical publications of the country but also to the lay press as well. Next came a motion to create a bureau of advertising to aid the periodicals that wished to conduct themselves in accord with the principles of the councils of the American Medical Association.

The Board of Trustees in 1913 established the Cooperative Medical Advertising Bureau to aid the state medical journals in securing acceptable advertising. At first the movement was heartily welcomed by the publishers of the state medical periodicals. Then, for various reasons, some leaders of state medical societies began to urge those responsible for the administration of these societies to discontinue the relationship of the state medical journals with the Cooperative Medical Advertising Bureau and to substitute therefor independent committees and agencies. Most persistent in the failure to function with the Cooperative Medical Advertising Bureau has been the *Illinois Medical Journal*, which never has followed the standards of the various scientific councils of the American Medical Association in the acceptance of advertising. Second on the list is the *New York State Journal of Medicine*, which for a brief period agreed to abide by the decisions of the councils which differentiate scientific from unscientific products but which thereafter preferred to have the profits to be derived from the publication of advertisements of unaccepted products. More recently the *Rhode Island Medical Journal* and *California Medicine* have defected from the standards of the councils and have established their own mechanisms for approving or disapproving advertisements which might be submitted to them or solicited by their independent advertising representatives or agencies. Presumably the decisions rest in each instance on the actions of special committees on publications and on the subsequent endorsement of the actions of these committees by the councils of the societies.

The first issue of *California Medicine* following its resignation from the Cooperative Bureau was its issue.

for October 1947. In that issue appeared the announcements of a dozen products which had not been accepted by the Council on Pharmacy and Chemistry. By January 1948 the number had increased to more than twenty-five products. Moreover, some of the ethical manufacturers who regularly submit through the Cooperative Medical Advertising Bureau products accepted by the councils for advertising in state medical journals apparently gave to the California, Illinois, New York and Rhode Island journals almost wholly products that were not accepted. Of course the California journal is still in the amateur stage as far as this debarkation into the promotion of unscientific products is concerned; perhaps it can learn from Illinois and New York, since their lists have been more expansive and extensive than those of California and Rhode Island. Rhode Island's small membership makes it less attractive as a medium for advertising to the medical profession; therefore, it may have far more to lose than to gain by its departure from the Cooperative Medical Advertising Bureau.

THE JOURNAL commented on this situation previously in October 1943. At that time THE JOURNAL pointed out that the battle for scientific therapy is a difficult one. As long as any considerable part of the medical profession helps to extend the blight of the falsely exploited proprietary medicine, this battle is more difficult. In any war the most dangerous attack is the attack from the inside; the story of the Trojan horse is too well known to require repetition. The threat most difficult to meet is the threat from those who are presumed to be friends. The time should long since have passed when leaders of medical organizations consent to permit the exploiters of unscientific proprietary remedies to pay the bulk of the cost of publishing and printing medical journals that are supposed to represent scientific medicine. Our state societies need efficient executive offices, public relations services and all the other mechanisms that have come to be a part of efficient operation, but they should not hope to pay for such procedures by the profits derived from unscientific exploitation of their membership and of their public who depend on that membership. Are the business managers or committees of the four medical journals that have been listed better equipped to judge what is scientific and honest in materia medica and therapeutics than are the Council on Pharmacy and Chemistry? The vast majority of physicians in the United States do not think so. The responsibility rests, however, not on these employees of these organizations but on the physicians who constitute their committees of publications, on the councils of the societies that endorse the actions of these committees and, finally, on the houses of delegates of these state societies that have not

apparently given sufficient thought to the extent to which they also share in the perpetuation of fraudulent and unscientific preparations and commercialized medicine. Nothing is so important to medicine today as its good name. That good name is its most important asset when it comes before the bar of public opinion.

PROTEINS AND AMINO ACIDS IN SURGERY

An important advance in surgery is the recognition of the relation of the patient's state of nutrition to his chances of withstanding the shock of operative procedures, of resisting postoperative infection, of achieving primary closure of operative wounds and of avoiding postoperative complications. Recently the concept of protein deficiency as an important factor in the complications of surgery has received increasing recognition.

Hoffman¹ presented a critical review discussing the role of proteins and amino acids in surgery. Several circumstances may lead to a protein deficiency in the preoperative and postoperative surgical patient: (1) decreased dietary intake of protein as in famine, poverty, obstructive conditions in the gastrointestinal tract and repeated vomiting; (2) decreased absorption of protein as in diarrheal states or ulcerative disease of the intestine and in conditions associated with diversion or absence of pancreatic juice or bile from the intestinal tract; (3) decreased formation of blood proteins due to disease of the liver; (4) increased loss of protein as in kidney disease, burns, hemorrhages, excessive vomiting or diarrhea or through suction drainage through enteric tubes, and (5) increased requirements of protein as in hyperthyroidism, fever, pregnancy and leukemia.

The clinical manifestations of protein deficiency include peripheral edema in the dependent portions of the body and the regions of low elastic tissue pressure. Edema of the lungs and edema of the intestine, particularly at the site of stomas, occur commonly. Other manifestations are diminished intestinal motility often with distention, delayed wound healing, hepatic damage, increased susceptibility to infection, shock, anemia and increased tendency to thrombosis and embolism.

The determination of concentration of total serum proteins can be used as a reliable index of the state of protein nutrition. The normal serum protein concentration ranges from 6.5 to 8.0 Gm. per hundred cubic centimeters, but here a note of caution is necessary: if there is a decreased plasma volume this value is not entirely reliable. In such circumstances it may be necessary to ascertain the total circulating protein by determining the plasma volume by one of the dye methods and multiplying this value in cubic centimeters by the concentrations of protein in grams per cubic centimeter.

1. Hoffman, W. S.: The Clinical Significance of Proteins and Amino Acids in Surgery, *J. Internat. Coll. Surgeons* 10: 492 (Sept.-Oct.) 1947.

The treatment suggested by Hoffman¹ for the patient with depleted protein stores is a diet high enough in protein to produce a positive nitrogen balance. As much as 125 Gm. of protein may be given daily using ordinary foods; unfortunately, in most cases of protein deficiency, even if the patient is able to take food orally, the limitations of appetite and volume capacity of the stomach make a high intake of natural foods impossible. By using concentrated protein foods such as dried whole milk, soybean powder, dried brewers' yeast or one of the powdered protein concentrates prepared from lactalbumin or hydrolysates of casein the protein of the diet may be increased to 300 Gm. per day without increasing the bulk of the diet.

In those patients unable to take adequate quantities of protein by mouth, the parenteral administration of mixtures of amino acids has been successful. Patients can be maintained in positive nitrogen balance for a limited period with hydrolysates of casein as the sole source of nitrogen. Clinical experience indicates that parenteral injections of amino acids are an important nutritional advance but are impractical when used as the only source of nitrogen for long periods of time. When they are used to supplement transfusions and high oral nitrogen intake, much better and faster clinical improvement is achieved.

Factors which limit the use of most of the available preparations for parenteral protein alimentation are the occurrence of headache, nausea, vomiting, flushing and venous thrombosis. These reactions are frequent when casein hydrolysates are given at rapid rates. Recent studies² in both dogs and human subjects indicate that glutamic and aspartic acids are responsible in part for these reactions, which result from the intravenous administration of casein digests; amino acid mixtures with little or none of these dicarboxylic acids are well tolerated.

With casein hydrolysates, the giving of enough material intravenously to supply the nitrogen and caloric needs is difficult. Available evidence indicates that approximately 1,000 calories plus adequate biologically utilizable nitrogen per day is adequate to produce nitrogen balance. However, there are few data regarding the optimum daily caloric intake necessary to produce the most efficient retention of nitrogen in patients in various protein deficiency states. Future advances in the science of nutrition will probably provide the surgeon with means of reducing the surgical risk and increasing the rate of recovery from surgical operations.

2. Madden, S. C.; Woods, R. R.; Shull, F. W.; Remington, J. H., and Whipple, G. H.: Tolerance to Amino Acid Mixtures and Casein Digests Given Intravenously; Glutamic Acid Responsible for the Reactions, *J. Exper. Med.* **81**: 439, 1945. Unna, K., and Howe, E. E.: Toxic Effects of Glutamic and Aspartic Acid, *Federation Proc.* **41**: 138, 1945. Smyth, C. J.; Levey, S., and Lasichak, A. G.: The Relationship of Glutamic and Aspartic Acids to the Production of Nausea and Vomiting in Man, *Am. J. M. Sc.* **214**: 281-285 (Sept.) 1947.

Current Comment

UTILIZATION OF ASCORBIC ACID

With the advent of vitamins in chemically pure form, the question has naturally arisen regarding the comparative nutritive value of the natural versus the synthetic forms of vitamins. Not only has there been presumptive superiority of certain of the vitamins as they occur in natural fruits and grains, but a recent report¹ describes the considerably greater vitamin C (ascorbic acid) potency of natural and fortified orange juices when assayed by the dental biologic assay than could be accounted for by the ascorbic acid determined therein by quantitative chemical analysis. Melnick and his co-workers² have thrown light on this general problem by reexamining the comparative stability of ascorbic acid in aqueous solution and in apple juice. Under controlled conditions of hydrogen ion (p_H) and initial concentration, the vitamin C in apple juice is far more stable when stored at high summer temperature than is the ascorbic acid in aqueous solution under like conditions. However, when the availability to the organism and the influence on the response to test doses of ascorbic acid was studied in human subjects, there was little if any difference in the behavior of the agent administered in water or that given in apple juice. Not only can apple juice be safely fortified with vitamin C, but also synthetic ascorbic acid administered for therapeutic purposes is absorbed and utilized by the body as well as that from natural sources.

FEDERAL TRADE COMMISSION SURVEYS ADVERTISEMENTS

The Federal Trade Commission¹ conducts a continuing survey of radio and periodical advertising to detect advertisements that may be false or misleading. During the last fiscal year 412,950 newspaper and other periodical advertisements and 641,402 radio commercial continuities were examined, and thousands of advertisements and broadcasting statements were designated for further study. Analysis of these questioned advertisements disclosed that 55.8 per cent of them pertained to drugs, 16.9 per cent to cosmetics, 5.9 per cent to food (human and animal), 2.2 per cent each to tobacco products and devices, 2 per cent to automobiles, radios, refrigerators and other equipment, 1.4 per cent to specialty and novelty goods, 1.1 per cent to home study courses and 12.5 per cent to miscellaneous products. These percentages seem to confirm the opinion that the drug business is by far the most usual approach to misleading advertisements. However, the special interest of investigators in health and the possibility of developing scientific evidence to support or deny claims may have been important factors.

1. Crampton, E. W., and Burton, B. W.: *Fed. Proc.* **5**: 230, 1946.

2. Melnick, D.; Hochberg, M., and Oser, B. L.: *J. Nutr.* **34**: 409 (Oct.) 1947.

1. Annual Report of the Federal Trade Commission for the Fiscal Year Ended June 30, 1947, Washington, D. C., Government Printing Office.

ORGANIZATION SECTION

Official Notes

"PHYSICIANS AND SCHOOLS"

A brochure outlining the relationship of the physician to the school health and physical education program is now available for distribution by the Bureau of Health Education.

The pamphlet is entitled "Physicians and Schools" and is the report of the National Conference on this subject held at Highland Park, Ill., October 1947. Recommendations on school health services, school health studies, inservice and preservice education and medical guidance in physical education and athletics are made.

A complimentary copy will be sent to physicians, teachers and public health workers on request. Additional copies will be priced at 25 cents each.

TELEVISION PROGRAMS EXTENDED

Since late autumn weekly health news telecasts have been presented over station WBKB, Chicago, by the Bureau of Health Education. Recently arrangements were completed to present weekly educational programs over this station, as a result of allotment of more time. The health news presentations, consuming from five to eight minutes, were based on items contained in the weekly newsletter of the American Medical Association. Frequently it was possible to have special scripts prepared to read over a silent film. The new educational program represents more active participation, since heretofore these were given at two week intervals. Presentation time has been extended to fifteen minutes. Following are subjects to be telecast in February:

February 9—School health inspection.
February 16—Smoke pollution.
February 23—Visual education.

RECORDING MEMBERSHIP AND FELLOWSHIP IN THE NEW DIRECTORY

The Information Cards received from physicians who have listed their data for the new, Eighteenth Edition of the "AMERICAN MEDICAL DIRECTORY," indicate increasingly that many are not aware of the difference between "Membership" and "Fellowship" in the American Medical Association.

Here are the official definitions:

Every MEMBER in good standing in the constituent medical association of the state in which he is engaged in practice whose name is officially reported to the Secretary of the American Medical Association for enrolment becomes automatically a MEMBER of the American Medical Association and is not called on, as such, to pay any dues or to contribute financially to the Association.

MEMBERS of the American Medical Association are eligible to apply for FELLOWSHIP.

To qualify as a FELLOW, a MEMBER in good standing is required to make formal application for FELLOWSHIP, to pay FELLOWSHIP dues and to subscribe for *The Journal*. Applications must be approved by the Judicial Council. Fellowship dues and subscription to *The Journal* are both included

in the one annual payment of \$12, which is the cost of *The Journal* to subscribers who are not FELLOWS.

MEMBERS of constituent state medical associations pay dues to those bodies, but as MEMBERS they pay nothing to the American Medical Association. FELLOWS pay dues and subscription to *The Journal* in the sum of \$12 a year, which has nothing to do with county or state dues.

According to an amendment to the By-Laws of the American Medical Association, no physician may be officially recorded as a MEMBER of the American Medical Association except on the basis of membership in one constituent state medical association, and that one the association of the state in which the physician concerned maintains legal residence and engages in the practice of medicine.

Each Fellow receives a Fellowship Card from the Association annually as payment of his dues is recorded, which card is presented for admission to the Annual Meetings of the Association.

Physicians who are eligible for Fellowship should make formal application immediately so that they may attend the Chicago Session and so that a record of their Fellowship may be received in time to include the Fellowship symbol in their data listed in the new "AMERICAN MEDICAL DIRECTORY."

Washington Letter

(From a Special Correspondent)

Feb. 5, 1948.

This Session of Congress

This session of Congress ordinarily would be a short session because of the coming election, but there is so much legislation demanding immediate attention that it is doubtful if adjournment will come before July 1. A number of items on the congressional program will be considered more urgent than welfare or health, but the subjects must receive consideration, as indicated in the President's message on the State of the Union. The matter of the creation of an executive department of health with cabinet status may be deferred until after the Hoover Commis-

sion makes its report on streamlining the Executive Department. At the close of the hearings on S. 545 and S. 1320, the Senate Committee on Labor and Public Welfare will have to decide whether to report out either or both of the bills. If it does not take such action before the close of the session, the bills will be dead. The House has not indicated any action on H. R. 3548 (Dingell) the companion to S. 1320. S. 545 has no companion bill in the House.

The President's Budget Message

The 1949 budget suggests expenditures for social welfare, health and security estimated at \$2,028,102,127, including \$116,000,000 for financing proposed legislation. The estimate involves increases for public health and public assistance pro-

grams and initial cost of the proposed health insurance program. The recommendations for a health insurance program contemplate a total initial payroll tax of 0.5 of 1 per cent of the individuals' salaries up to \$4,800 a year, effective Jan. 1, 1949, to furnish a basis for establishing eligibility for benefits and to build up an operating reserve. Permanent rates, to make the program mainly self financing, would be set up in a year or two.

Included in the budget is an increase for education and general research which results mainly from the proposed grants by the federal government to states to aid elementary and secondary education and from the proposed establishment of a National Science Foundation. The budget estimates assume the creation of the National Science Foundation; passage of such legislation was again urged. For the hospital and medical care of the Veterans Administration \$615,000,000 is estimated. The operating expenses of this program will increase substantially because of the steady rise in patient load. The outpatient care program will cost slightly less than in the current year.

The President in his message stated that he intends shortly to discuss, in a special message to Congress, proposals that would have immediate fiscal effects on the following items: the extension coverage of old age and survivors' insurance; increase in individual benefits; provision for a national system of health insurance and improved services and facilities for public health and medical care, and extension of unemployment compensation pertaining to federal aid for public assistance so as to relate them to the financial resources and needs of each state.

Appointment of Dr. Magnuson as Veterans' Medical Chief Applauded

The appointment of Dr. Paul B. Magnuson of Chicago as medical chief of the Veterans Administration to succeed Dr. Paul R. Hawley has received favorable comment. Typical was that of George Beveridge in the *Washington Evening Star*: "A 63-year-old Chicago surgeon is visualizing a daring plan to make a Government hospitalization program the center of medical progress in this country. He is Dr. Paul B. Magnuson, whose selection as medical director of the Veterans' Administration gives reason for elation among the Nation's sick war veterans as well as its doctors." Dr. Magnuson places considerable stress on the hospital training program, which now has some two thousand young residents. Careful supervision is to be given to their training. The program has been extended through state and county medical societies permitting civilian physicians to take advantage of courses. The new director states: "Adequate and fast treatment of World War II veterans in hospitals and clinics now will save millions of dollars that otherwise will have to be poured into hospitals later. The American people are paying for this program. They should know what it can do. Then, they must make up their minds whether they want to support it."

Incidence of Chronic Diseases

Dr. P. S. Lawrence of the U. S. Public Health Service has just reported results of a study on the incidence rate of chronic disease requiring more or less regular care of a physician. The study shows that the rate starts to climb at the age of 45. The survey showed that at 25 years of age about 35 of every thousand persons have some chronic illness or major physical disability. Then a gradual increase occurs to a rate of about 100 cases per thousand at age 45. At age 60 there are some 250 chronically ill persons per thousand, increasing during the next 10 year age bracket to 400 per thousand. At 80 years of age, more than half of the group requires regular care of a physician, and the rate is more than 900 per thousand at age 90. Study of the figures also discloses that of every 1,000 persons who are well at 45 years of age, 100 during the subsequent five years will require medical attention for a chronic or major illness. A few will require almost constant medical care until death. The report shows that in nearly 25 per cent of the persons who are well at 60 years of age a chronic ailment will develop in the following five years. The survey showed that the total death rate for a twenty-five year period was about 178 fatalities per thousand, 196 among males and 158 among females. The study was based on a quarter of a century survey conducted among

the population of Hagerstown, Md. Health conditions of all persons of all ages among 2,000 white families were tabulated. The record was kept of what had happened to the group as a whole and to those in perfect health in 1923.

Negro Veterans' Hospital Authorized by House of Representatives

A bill authorizing a \$5,000,000 hospital for Negro veterans, to be erected at the birthplace of Booker T. Washington in Franklin County, Virginia, has been passed by the House of Representatives and sent to the Senate. Representative Edith Rogers, Republican of Massachusetts, chairman of the House Veterans Affairs Committee, said that the hospital would be of great benefit to Negro veterans, 50,000 of whom are in Virginia alone. Representative John Rankin, Democrat of Mississippi, supported passage of the bill to care for Negro veterans of not only Virginia but also West Virginia, eastern Tennessee and other nearby areas. A committee report on the bill stated that a hospital in Franklin County would be a "timely recognition" of the services rendered by Booker T. Washington, "one of the most outstanding leaders of the Negro race."

Red Cross Buys Forty-Three Thousand Transfusion Sets

The American Red Cross has bought about 43,000 blood transfusion recipient sets from surplus stocks of the War Assets Administration. The sets, built for wartime use in the field, cost the government 90 cents each and were sold to the Red Cross for 10 cents each. The apparatus was new and was examined and approved by the U. S. Pure Food and Drug Administration. Sets, sealed in metal tubes, consist of glass filter housing, metal filter, one 3½ foot (106.68 cm.) length of rubber tubing and one 18 gage, 1½ inch (3.81 cm.) airway cannula needle.

Coming Medical Meetings

Annual Congress on Medical Education and Licensure, Chicago, Palmer House, Feb. 9-10. Dr. Donald G. Anderson, 535 North Dearborn St., Chicago 10, Secretary.

American Association of Industrial Physicians and Surgeons, Boston, March 28-April 4. Dr. Frederick W. Slobe, 28 E. Jackson Blvd., Chicago 4, Secretary.

American College of Allergists, New York, Hotel Pennsylvania, March 12-14. Dr. Fred W. Wittich, 423 LaSalle Medical Bldg., Minneapolis 2, Secretary.

American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, Philadelphia, Feb. 26. Dr. Norman N. Smith, 291 Whitney Ave., New Haven 11, Conn., Secretary.

American Society of Biological Chemists, Atlantic City, March 14-19. Dr. Otto A. Bessey, Public Health Research Institute, New York 19, Secretary.

Central Surgical Association, Chicago, Drake Hotel, Feb. 19-21. Dr. Walter G. Maddock, 250 E. Superior St., Chicago 11, Secretary.

Chicago Medical Society Annual Clinical Conference, Chicago, Palmer House, March 2-5. Dr. Willard O. Thompson, 30 N. Michigan Blvd., Chicago 2, Secretary.

Dallas Southern Clinical Society, Dallas, Texas, Hotel Adolphus, March 15-18. Dr. Glenn D. Carlson, 1133 Medical Arts Bldg., Dallas, Secretary.

Michigan Postgraduate Clinical Conference, Detroit, Book-Cadillac Hotel, March 10-12. Dr. H. H. Cummings, 2014 Olds Tower, Lansing 8, Chairman.

Mid-South Postgraduate Medical Assembly, Memphis, Tenn., Feb. 10-13. Dr. Arthur F. Cooper, 1479 Carr Ave., Memphis, Secretary.

Missouri State Medical Association, St. Louis, Hotel Jefferson, March 14-17. Mr. T. R. O'Brien, 634 N. Grand Blvd., St. Louis 3, Exec. Secretary.

National Conference on Medical Service, Chicago, Palmer House, Feb. 8. Dr. Edward F. Sladek, 232 E. Front St., Traverse City, Mich., Secretary.

New Orleans Graduate Medical Assembly, New Orleans, Municipal Auditorium, Feb. 23-26. Dr. Max M. Green, 1430 Tulane Ave., Room 105, New Orleans 13, Secretary.

Pacific Coast Surgical Association, Los Angeles, Ambassador Hotel, Feb. 24-28. Dr. Carleton Mathewson Jr., Stanford Univ. Hospital, San Francisco, Secretary.

Tri-States Medical Association of the Carolinas and Virginia, Charleston, S. C., Fort Sumter Hotel, Feb. 9-10. Dr. James M. Northington, 306 N. Tryon St., Charlotte 2, Secretary.

United States-Mexico Border Public Health Association, Laredo, Texas and Nueva Laredo, Mexico, March 20-22. Dr. M. F. Haralson, U. S. Court House, El Paso, Texas, Secretary.

THE PHYSICIAN'S FEDERAL INCOME TAX

Prepared by the Bureau of Legal Medicine and Legislation, American Medical Association

Federal income taxpayers on a calendar year basis must on or before March 15 do two things: (1) they must file their final returns for the year 1947 and (2) they must file a declaration of estimated tax for 1948.

WHO MUST FILE RETURNS

A return must be filed by every citizen or resident of the United States whose total gross income in 1947 was \$500 or more. Joint returns may be filed by husband and wife if (1) they were married at the end of the year and (2) both were citizens or residents of the United States. Such a joint return may be filed even though one spouse has neither income nor deductions.

WHO MUST FILE DECLARATIONS OF ESTIMATES

In addition to filing the final return for 1947, certain taxpayers must file on or before March 15 a declaration of estimated tax for 1948. Such a declaration must be filed by a taxpayers if:

- (1) his gross income from wages or salary subject to withholding can reasonably be expected to exceed the sum of \$5,000 plus \$500 with respect to each exemption, except his own, or
- (2) his gross income which is not subject to withholding can reasonably be expected to exceed \$100 for 1948 and his gross income from all sources can reasonably be expected to be \$500 or more.

A taxpayer, if necessary, may file one or more amended declarations during 1948 but only one in each calendar quarter. The last such amended declaration must be filed on or before Jan. 15, 1949.

The estimated tax may be payable quarterly as it was in 1947, the final payment becoming due Jan. 15, 1949.

TAX RATES AND EXEMPTIONS

The normal tax rate remains at 3 per cent, but after the tentative tax is computed at this rate there is allowed a reduction of 5 per cent of the tax thus computed. The surtax rate begins at 17 per cent of the first \$2,000 of surtax net income. As with the normal tax, after the tentative surtax is computed a reduction of 5 per cent of it is permitted by the Revenue Act of 1945. These rates apply in connection with 1947 income. They must also be used in the declaration of estimated tax for 1948, unless rates are changed by Congress prior to March 15.

For both normal and surtax purposes, the exemptions are in the amount of \$500 each for the taxpayer, for his or her spouse and for each dependent whose gross income is under \$500.

The determination as to whether a taxpayer is single or married is made as of the last day of the taxable year. There is no status determination date for dependents, the test being whether the taxpayer furnished over half of the support.

GROSS AND ADJUSTED GROSS INCOMES

Gross Income.—A physician's gross income is the total amount of money received by him during the year for professional services, regardless of the time when the services were rendered for which the money was paid, assuming that the return is on a cash receipts and disbursements basis, plus such money as he has received from investments and from other sources.

If a physician receives a salary as compensation for services rendered and in addition thereto living quarters or meals, the value to the physician of the quarters and meals so furnished ordinarily constitutes income subject to tax. If, however, living quarters or meals are furnished for the convenience of the employer, the value thereof need not be computed and added

to the compensation otherwise received by the physician. As a general rule, the test of "convenience of the employer" is satisfied if living quarters or meals are furnished to a physician who is required to accept such quarters and meals in order to perform properly his duties. For example, if a physician employed by a hospital is subject to immediate service at any time during the twenty-four hours of the day and therefore cannot obtain quarters or meals elsewhere without material interference with his duties and on that account is required by the hospital to accept the quarters or meals furnished by it, the value thereof need not be included in the gross income of the physician.

Tuition payments and subsistence allowances for veterans made under the G. I. Bill of Rights are not taxable income. Mustering out payments are likewise nontaxable.

Adjusted Gross Income.—Adjusted gross income is defined to mean gross income minus:

- (1) deductions attributable to a trade or business carried on by the taxpayer, if such trade or business does not consist of the performance of services by the taxpayer as an employee;
- (2) expenses of travel, meals and lodging while away from home, paid or incurred by the taxpayer in connection with the performance by him of services as an employee;
- (3) certain reimbursed expenses in connection with employment;
- (4) deductions attributable to property held for the production of rents or royalties;
- (5) depreciation or depletion allowed a life tenant of property or to an income beneficiary of property held in trust, and
- (6) losses from the sale or exchange of property.

The adjusted gross income is to be used as a basis to determine (1) the limitation on the deduction for charitable contributions (15 per cent of the adjusted gross income), (2) the amount of the deduction for medical expense (excess over 5 per cent of adjusted gross income), (3) the amount of the optional standard deduction the taxpayer may elect to take (10 per cent of adjusted gross income in certain income brackets), (4) exemptions in certain cases where joint returns are filed by husband and wife and (5) if the taxpayer may take advantage of the optional tax table devised for incomes under \$5,000.

OPTIONAL TAX TABLE

If a taxpayer has an adjusted gross income of less than \$5,000, he may if he so elects compute his tax by using the optional or alternative tax table. This table allows for the normal tax and surtax exemptions and for nonbusiness deductions approximating 10 per cent of the adjusted gross income. The election may be exercised irrespective of the source of the income. This table may not be used if the adjusted gross income of the taxpayer is \$5,000 or more, but in such cases an optional flat \$500 deduction may be claimed in lieu of nonbusiness deductions generally, such as charitable contributions, interest and taxes. Such a taxpayer may elect to exercise this option or he may itemize such deductions as in prior years. The taxpayer who reports an adjusted gross income of less than \$5,000 a year will not be allowed the standard deduction as a separate item. Its benefits may be obtained only by using the optional tax table, which, as already indicated, assumes that the user of the table is entitled to a deduction approximating 10 per cent of his adjusted gross income.

PHYSICIANS IN SERVICE

The fact that a physician is in service does not of itself excuse a failure to file a return or declaration. It is understood, however, that if because of the inaccessibility of the necessary

records a physician in service is unable to file a complete return he may file a tentative return on which he must estimate his income, deductions and tax as best he can and indicate on the return his reasons for following the procedure. At a later date, if that procedure is followed, a complete return must be filed and necessary adjustments in tax will be made. What has just been said relates to physicians in service who are stationed in this country.

If a physician in service is on duty outside the United States, no income tax return will become due, generally speaking, until the fifteenth day of the sixth month following the month in which the physician ceases, except by reason of death or incompetence, to be a member of the military forces on sea duty or in service outside the continental United States. The return must be filed not later than June 15, 1948.

The law provides a special exemption for members of the armed forces. For taxable years after 1942 and before the termination of the war, so much of the active service pay as does not exceed \$1,500, received as a commissioned officer or a commissioned warrant officer, is excluded from gross income. In addition the commissioned officer is entitled to the personal exemptions, credits and allowable deductions provided by law. For taxable years after 1940 and before the end of the war all the pay for active service received by a serviceman below the grade of commissioned officer or commissioned warrant officer is nontaxable. He too is entitled to the other exemptions, credits and deductions.

If ability to make payment is materially impaired by reason of service, deferment of the tax, without interest, until six months after active service terminates can be effected through the office of the collector of internal revenue, under section 513 of the Soldiers' and Sailors' Civil Relief Act. Furthermore, if it causes hardship to meet tax liability after termination of service, additional extension may be obtained under section 700 of that act, by application to the courts, for a period equal to the length of military service, subject to the requirement of periodic payment, with interest at 6 per cent.

The Revenue Act of 1945 grants further extension of time for payment, without interest, of any tax attributable to service pay for any taxable year beginning after Dec. 31, 1939 and before Jan. 1, 1947. The payment of the tax, if proper application is made, will be extended for thirty-six months, payable in twelve equal quarterly instalments. In the case of regular officers this extension operates only when the tax has been deferred by reason of sea or overseas duty. Application for the extension must be filed before the first instalment date which the law fixes as follows: If the release from active duty was prior to Dec. 1, 1945 the first instalment date was May 15, 1946; (2) if released on or after Dec. 1, 1945 the first instalment date was June 15, 1947 or the fifteenth day of the sixth month which begins after the date of release from active duty, whichever was earlier. A similar extension can be had in connection with the payment of the tax attributable to earned income of the years 1940 and 1941 which became due after entry into service. Earned income for this purpose cannot exceed \$14,000.

Any tax owed by any person who died while in active military or naval service of the United States or of any of the other united nations on or after Dec. 7, 1941 and before Jan. 1, 1948 will be canceled. Any tax for years prior to 1941 and before entry into service, including interest and penalties which are unpaid at the date of such death, will likewise be canceled. If the tax has been collected it will be refunded provided a claim for the refund is filed before Jan. 1, 1949. This tax forgiveness applies only to income taxes and not to estate tax.

The cost of equipment of an army officer or navy officer is deductible only to the extent that it is especially required for his profession and does not merely take the place of articles required in civilian life. The cost of uniforms is considered a personal expense and hence not deductible. The cost of gold braid and cap devices required by regulations of the Navy to

be worn on the clothing of a naval officer has been held to constitute an expense necessitated by reason of his profession as an officer and to be deductible as a business expense.

DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The taxpayer should make no claim for the deduction of expenses unless he is prepared to prove the expenditure by competent evidence. As far as practicable, accurate itemized records should be kept of expenses and substantiating evidence should be carefully preserved. The following statement shows what such deductible expenses are and how they are to be computed:

Office Rent.—Office rent is deductible. If a physician rents an office for professional purposes alone, the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for office purposes, he may deduct a part of the rental fairly proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in such dwelling house or apartment, he may not, however, deduct any part of the rent of such house or apartment as professional expense; to entitle him to such a deduction he must have an office there, with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with "rent" and deduct the amount so charged.

Office Maintenance.—Expenditures for office maintenance, as for heating, lighting, telephone service and the services of attendants, are deductible.

Supplies.—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using; for instance, dressings, clinical thermometers, drugs and chemicals. Professional journals may be classified as supplies and the subscription price deducted. Amounts currently expended for books, furniture and professional instruments and equipment, "the useful life of which is short," generally less than one year, may be deducted, but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

Equipment.—Equipment comprises property of a more or less permanent nature. It may ultimately wear out, deteriorate or become obsolete, but it is not in the ordinary sense of the word "consumed in the using."

The cost of equipment such as has been described, for professional use, cannot be deducted as expense in the year acquired. Examples of this class of property are automobiles, office furniture, medical, surgical and laboratory equipment of more or less permanent nature, and instruments and appliances constituting a part of the physician's professional outfit, to be used over a considerable period of time, generally over one year. Books of more or less permanent nature are regarded as equipment, and the purchase price is therefore not deductible.

Although the cost of such equipment is not deductible in the year acquired, nevertheless it may be recovered through depreciation deductions taken year by year over its useful life, as described later.

No hard and fast rule can be laid down as to what part of the cost of equipment is deductible each year as depreciation. The amount depends to some extent on the nature of the property and on the extent and character of its use. The length of its useful life should be the primary consideration. The most that can be done is to suggest certain average or normal rates of depreciation for each of several classes of articles and to leave to the taxpayer the modification of the suggested rates as the circumstances of his particular case may dictate. As fair, normal or average rates of depreciation, the following have been suggested: automobiles, 25 per cent a year; ordinary medical libraries, x-ray equipment, physical therapy equipment, electrical sterilizers, surgical instruments and diagnostic apparatus, 10 per cent a year; office furniture, 5 per cent a year.

The principle governing the determination of all rates of depreciation is that the total amount claimed by the taxpayer as depreciation during the life of the article, plus the salvage value of the article at the end of its useful life, shall not be greater than its purchase price. The physician must in good faith use his best judgment and claim only such allowance for depreciation as the facts justify. The estimate of useful life, on which the rate of depreciation is based, should be carefully considered in each individual case.

Medical Dues.—Dues paid to societies of a strictly professional character are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are personal expenses and not deductible.

Postgraduate Study.—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

Traveling Expenses.—Traveling expenses, including amounts paid for transportation, meals and lodging, necessarily incurred in professional visits to patients and in attending medical meetings for a professional purpose, are deductible.

Automobiles.—Payment for an automobile is a payment for permanent equipment and is not deductible. The cost of operation and repair, and loss through depreciation, are deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeur's wages and the like.

Deductible loss through depreciation of an automobile is the actual diminution in value resulting from obsolescence and use and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years, the series must extend over the entire estimated life of the car, not merely over the period in which the car is possessed by the present taxpayer.

If an automobile is used for professional and also for personal purposes—as when used by the physician partly for recreation, or so used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice and using his car merely to go to and from his office cannot deduct depreciation or operating expenses; he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood. What has been said in respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use.

MISCELLANEOUS

Contributions to Charitable Organizations.—For detailed information with respect to the deductibility of charitable contributions generally, physicians should consult the official return blank or obtain information from the collectors of internal revenue or from other reliable sources. An individual taxpayer can deduct such contributions only to the extent that they do not exceed 15 per cent of his adjusted gross income. The physician may not deduct as a charitable contribution the value of services rendered an organization operated for charitable purposes.

Bad Debts.—Physicians who make their returns on a cash receipts and disbursements basis, as most physicians do, cannot claim deductions for bad debts.

Taxes.—Taxes generally, either federal or state, are deductible by the person on whom they are imposed by law. Both real and personal property taxes are deductible; but so-called taxes, more properly assessments, paid for local benefits, such as street, sidewalk and other like improvements, imposed because of and measured by some benefit inuring directly to the property against which the assessment is levied, do not constitute an allowable deduction from gross income. Physicians may deduct state gasoline taxes and state sales taxes. In some states sales taxes are imposed on the seller, but if they are passed on to the buyer the latter may deduct them.

State income and use taxes are deductible; federal income taxes are not. Federal import, excise or stamp taxes are deductible only to the extent that they are attributable to business activities. State automobile license fees are deductible. If a state or local fee is imposed for regulatory purposes, and not to raise revenue, the fee may not ordinarily be deducted as a tax. If such fees, however, are classifiable as a business expense they are deductible as such. Annual registration fees imposed on physicians probably come within the category of regulatory fees and should be deducted as a business expense rather than as taxes. Local and state occupational taxes imposed on physicians are deductible either as taxes or as a business expense, depending on the purpose for which the tax is imposed.

The excise taxes imposed on employers by section 804, title VIII, and section 901, title IX, of the Social Security Act, commonly referred to as old age and unemployment benefit taxes, are deductible annually by employers in computing net income for federal income tax purposes. If the taxpayer's return is made on a cash basis, as are the returns of practically all physicians, the taxes are deductible for the year in which they are actually paid. If the return is made on an accrual basis, the taxes are deductible for the year in which they accrue, irrespective of when they are actually paid. Employees, including physicians whose employment brings them within that category, may not deduct the tax imposed on them by section 801, title VIII, of the Social Security Act, generally referred to as the old age benefits tax. If, however, the employer assumes payment of the employee's tax and does not withhold the amount of the tax from the employee's wages, the amount of the tax so assumed may be deducted by the employer, not as a tax paid but as an ordinary business expense.

Medical Expense.—A taxpayer may deduct amounts expended for medical, dental and hospital care for himself, his spouse or a dependent, not compensated for by insurance or otherwise, including amounts paid for accident and health insurance, according to a prescribed formula. Deductions will be permitted to the extent that such expenses exceed 5 per cent of the adjusted gross income of the taxpayer but not in excess of \$2,500 in case of a taxpayer with more than one exemption, or \$1,250 in case of a taxpayer with only one exemption.

Laboratory Expenses.—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

Losses by Fire or Other Causes.—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by insurance or otherwise recoverable, may be computed as a business expense and is deductible, provided evidence of such loss or damage can be produced. Such loss or damage is deductible, however, only to the extent to which it has not been made good by repair and the cost of repair claimed as a deduction.

Insurance Premiums.—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice, against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment and damage to or loss of professional equipment by fire or otherwise. Under professional equipment is to be included any automobile belonging to the physician and used for strictly professional purposes.

Expense in Defending Malpractice Suits.—Expense incurred in the defense of a suit for malpractice is deductible as a business expense.

Sale of Spectacles.—Oculists who furnish spectacles, etc., may charge as income money received from such sales and deduct as an expense the cost of the article sold.

Medical Legislation

MEDICAL BILLS IN CONGRESS

National Science Foundation

A bill introduced by Representative Priest, Tennessee, H. R. 4852, proposes to enact a National Science Foundation Act which would establish a National Science Foundation as an independent agency of the government. This foundation will be authorized to foster and encourage a national policy for scientific research and scientific education, to grant scholarships and graduate fellowships in the mathematical, physical, medical, biologic, engineering and other sciences, to foster the interchange of scientific information among scientists in the United States and foreign countries and to correlate the foundation's scientific research programs with those undertaken by individuals and by public and private research groups. The bill with certain exceptions follows closely the legislation passed during the First Session of the Eightieth Congress and vetoed by the President.

It provides that there shall be a director of the foundation to be appointed by the President, by and with the advice and consent of the Senate. The vetoed bill provided that this director was to be appointed by the foundation. The present bill, too, omits any provision specifically authorizing the creation of special commissions on cancer research, on cardiac and intravascular diseases, poliomyelitis and other degenerative diseases. It provides for a number of special divisions of the foundation, including a Division of Medical Research.

With respect to patent rights, it provides that each contract or other arrangement relating to scientific research must contain provisions covering the disposition of inventions produced thereunder in a manner calculated to protect the public interest and the equities of the individual or organization with which the arrangement is made.

National Heart Institute

Two bills, H. R. 5087, introduced by Representative Keefe, Wisconsin, and H. R. 5159, introduced by Representative Smathers, Florida, proposed to enact a National Heart Act. There would be established in the United States Public Health Service a National Heart Institute to conduct research and control relating to diseases of the heart and circulation. It is contemplated that there will be created a National Heart Council, composed of the Surgeon General of the Public Health Service, or his representative, the Chief Medical Officer of the Veterans Administration, or his representative, the Surgeon General of the Army, or his representative, the Surgeon General of the Navy, or his representative, and twelve members appointed by the Surgeon General of the Public Health Service with the approval of the Federal Security Administration. Grants-in-aid to states and local governments for the establishment of local heart disease control programs will be authorized if this legislation is enacted.

Food, Drug and Cosmetics

Legislation proposing to give the Food and Drug Administration jurisdiction over foods, drugs, devices or cosmetics when held for sale, whether or not the first sale, after shipment in interstate commerce, has been passed by the House of Representatives.

Miscellaneous

A bill introduced, by request, by Senator Buck, Delaware, S. 2027, would amend the healing arts practice act of the District of Columbia so as specifically to authorize the issuance of licenses to applicants without examination who are certified as competent by a national examining board.

The construction of a Veterans Administration general medical and surgical hospital in Baltimore, Md., is contemplated by H. R. 4950, introduced by Representative Meade, Maryland.

A bill introduced by Representative Patterson, Connecticut, H. R. 4914, proposes to establish a presumption of service-connection for functional disorders of the nervous system and psychoses for certain veterans of World War II.

Senator Pepper, Florida, proposes by S. 1863 to amend the Internal Revenue Code to authorize the deduction of educational expenses of teachers in computing income taxes.

S. J. Res. 166, introduced by Senator Smith, New Jersey, for himself and Senator Fulbright, Arkansas; Senator Saltonstall, Massachusetts; Senator Bricker, Ohio; Senator Knowland, California; Senator Hatch, New Mexico; Senator Lodge, Massachusetts; Senator Thomas, Utah; Senator Ball, Minnesota; Senator O'Mahoney, Wyoming, and Senator Hill, Alabama, provides that any future payments by the republic of Finland on the principal or interest of its debt of World War I to the United States shall be used to provide educational and technical instruction and training in the United States and for citizens of Finland, the students to be selected, on nomination of the government of Finland, by the Board of Foreign Scholars.

Representative McCormack, Massachusetts, proposes by H. R. 5037 to exempt from the manufacturers' excise taxes articles sold to hospitals not organized for profit.

An expansion of the hospital facilities at the United States Veterans' Hospital at Muskogee, Okla., is to be authorized by H. R. 5070, introduced by Representative Stigler, Oklahoma. The bill would authorize an appropriation of \$500,000 for this purpose.

STATE LEGISLATION

Kentucky

Bills Introduced.—S. 62 and H. 89, relating to license taxes in certain cities in the state, propose to authorize the board of aldermen to provide for licensing any profession and for the using of any animal.

Massachusetts

Bills Introduced.—H. 703 proposes to authorize the establishment of a University of Massachusetts in Boston to furnish instruction, among other things, in medicine. H. 1156 proposes to entitle all persons within the state to be entitled to the full and equal accommodations of dispensaries, clinics, hospitals, and business or professional schools, without discrimination because of race, color, creed or national origin. H. 1224 proposes the establishment of a school of medicine as a part of the University of Massachusetts. H. 1227, relating to the purposes for which the school committee of the city of Boston may make appropriations, proposes to authorize appropriations for organizing and conducting physical training and exercises, athletics, games and the like under the control of the committee and further proposes to authorize the payment by insurance or otherwise of the reasonable hospital, medical and surgical expenses incurred by or in behalf of any student who sustains injuries while participating in any of the organized school athletics. H. 1347 proposes the creation of a Massachusetts state board of naturopathic examiners. Naturopathy is defined by the proposal as the prevention, diagnosis and treatment of human ailments and diseases by means of any one or more of the psychologic, physical or mechanical, chemical or material forces of nature, excluding drugs, surgery or other artificial measures. S. 162, relative to increasing the curriculum of the University of Massachusetts, proposes the establishment of a medical and dental school in Springfield.

Bill Passed.—H. 91 passed the house January 20. To amend the medical practice act, it proposes to provide for the revocation of the certificate of registration of any physician guilty of the use of narcotic drugs in any way other than for therapeutic purposes.

Mississippi

Bills Introduced.—H. 37 proposes that no license to marry shall be issued to a male or female applicant unless the applicant presents a medical certificate and laboratory report to the circuit clerk at the time of the application. The medical certificate shall be executed by an active licensed physician in Mississippi, or a physician licensed to practice in any or all of the other states in the United States or the District of Columbia, or by a commissioned medical officer on active duty in the armed forces of the United States, or by a medical officer of the United States Public Health Service. S. 63 proposes that the board of trustees of universities and colleges shall maintain the first two years of the four year medical school at Oxford, Miss., until such time as the legislature shall authorize the removal therefrom, and shall locate the remainder of the medical course in conjunction with a standardized and departmentalized hospital for teaching purposes of not less than three hundred fifty beds.

New York

Bills Introduced.—CCH A. RES. 43 proposes that the Congress of the United States be memorialized to appropriate the sum of \$100,000,000 to finance or subsidize a campaign to discover the cause of cancer and other kindred malignancies. A. 236, A. 373 and S. 293 propose the enactment of antidiscrimination laws. A. 348, to amend the education law, proposes the establishment of an Empire State University to be composed, among other things, of a school of medicine. A. 370, to amend the education law, proposes to require the board of education to provide adequate health services for pupils attending the public schools, such service to include the necessary facilities to afford adequate physical examinations, including roentgen examination of the chest of all pupils, annually. S. 171, to amend the law relating to prescriptions for somnifacient drugs, proposes to prohibit the refilling of prescriptions for a barbiturate or other hypnotic or somnifacient drug unless the prescription includes a statement by the prescriber that it may be refilled and specifies the minimum interval between fillings and the total number of refillings prescribed. No such prescription shall be refilled in any event later than three months after the original issuance thereof. S. 280, S. 283 and S. 370 are the same as S. 371, previously detailed (THE JOURNAL, p. 355, January 3). To amend the law relating to employment insurance, they propose to extend the term "total employment" to include unemployment caused by sickness or disability, which is certified by a physician or surgeon duly licensed to practice in the state of New York or in any other state, territory or possession of the United States. S. 392, to amend the unemployment insurance law, proposes to extend the coverage thereof to include employees of charitable, scientific, literary or educational organizations. S. 372, to amend the workmen's compensation law, proposes to allow an employee a reasonable fee for medical witnesses. S. 395, to amend the education law, proposes the creation of a board of examiners in ophthalmic dispensing. S. 463, to amend the judiciary law, proposes to exempt physical therapists and podiatrists from jury service. S. 475, to amend the workmen's compensation law, proposes to authorize injured claimants to have free choice of a duly authorized hospital. S. 491, to amend the vehicle and traffic law, proposes to require chauffeurs to obtain a certificate from a duly licensed physician attesting that the applicant has been examined and found mentally and physically competent at least once every three years. S. 492, to amend the vehicle and traffic law, proposes that the test of operators and chauffeurs shall include a test for color blindness and night driving tests.

Rhode Island

Bills Introduced.—H. 572 and S. 48, to amend the law relating to professional nursing, propose to add a few sections which would regulate the practice of practical nursing, a term which is not defined.

GOVERNMENT SERVICES

ARMY

ARMY TO TEST NEW DRUG AGAINST SCRUB TYPHUS IN MALAYA

The Army Medical Department soon will stage an extensive test of the efficacy of chloromycetin, the only drug thus far discovered which is as effective against certain rickettsial organisms as the sulfonamide drugs and penicillin are effective against bacteria. The test will be made in an effort to stop the spread of scrub typhus in the Far East. Dr. J. E. Smadel, director of virus research, Army Medical Center, and one of the discoverers of this substance, plans to fly to the Malay States early this spring to treat plantation workers among whom scrub typhus is making serious inroads. The carrier of the infection is a mite which is probably spread by rodents. During the war many plantations in Malaya were allowed to go back to brush. This resulted in an increase of infested rodents. Workers who clear the plantations have suffered a heavy mortality rate.

The early experiments at the Army Medical Research and Graduate School showed that chloromycetin was effective against the organism responsible for scrub typhus (rickettsial tsutsugamushi). This organism is related to the organism responsible for epidemic typhus, but typhus vaccine has proved useless as protection against scrub typhus. The new drug showed considerable potency against both typhus and scrub typhus organisms in experimental infections of incubated eggs and in animals. It also proved effective against several other diseases due to rickettsia. Experience has shown, however, that laboratory results do not always work out in the field. Dr. Smadel has just returned to Washington from Mexico, D. F., Mexico, where the new drug was tested against typhus. The Army is not ready to announce the results. The proposed attack on scrub typhus is considered of great importance, since this disease has proved difficult to treat in any known way.

The outlook is promising, according to the Surgeon General. At least a start has been made on specific drug treatment of the large class of rickettsial diseases which are responsible for some of the most devastating scourges of the human race. It has been found to be mildly effective against psittacosis. However, the psittacosis organism is one of the largest of the viruses and just falls short of being classified as a rickettsia.

Scrub typhus was a major problem in the Pacific area during the war. Efforts to produce a vaccine against it cost the lives of three American and several British workers. Nothing was accomplished until the war was nearly over. A vaccine finally was prepared from the macerated lungs and spleens of infected rodents, but when this was given actual field tests it was found to be ineffective.

CONSULTANTS ASSIST IN NEW OVERSEAS PROGRAM

The first two civilian Army medical consultants to participate in the new overseas advanced professional training program departed for Europe about January 20 for a month's tour of hospitals in the American-occupied zone of Germany. The two consultants were Dr. George Finney, surgeon, Johns Hopkins University School of Medicine, Baltimore, and Dr. Walter Martin, internist, in private practice in Norfolk, Va. Completing the team was Col. Beverly Smith, M. C., chief, psychiatric service, Walter Reed General Hospital. The departure of this group marks the inauguration of one aspect of a plan to achieve the highest possible standards of medical care, professional training and career advancement of the professional personnel of the Medical Department. It is planned to send overseas in connection with this program two consultants and one medical corps officer each month. The mission will be, first, to study and report on means of improving the care of hospital patients and, second, to act as instructors in specialized advanced training of medical officers.

The Surgeon General recently asked each of the six hundred and seven civilian specialist consultants of the Medical Department if they could volunteer for overseas assignment under this plan, and of the two hundred and sixty-nine who had replied to January 13, seventy-six said that they would be available this year, sixty-one replied that they would try to join in the program and one hundred and thirty-two, less than one-half, stated that professional commitments would prevent their participation.

MEDICAL MEETING IN KOREA

About eighty-five officers including nurses, dietitians, and medical service corps personnel attended the monthly meeting of Army Medical Officers stationed in Korea at the 71st Station Hospital, APO 6, January 14. Major Frank A. Neuman of the 6th Infantry Division read a paper on "The Cholera Epidemic in Korea in 1946," which was discussed by Capt. Ernst Kopp. Both men played an important part in the control of the epidemic. About 15,000 cases with 10,000 deaths occurred in 1946, while only 16 cases with 10 deaths occurred in 1947. All cases were among Koreans. Dr. Clarence Bigger, adviser, Department of Public Health and Welfare, U. S. Army Military Government in Korea, who has spent many years there as a medical missionary, reviewed his experience during similar epidemics as well as control measures used by the Japanese during their occupation of Korea. Capt. Arnold G. Blumberg, on request, again presented his paper on rheumatic fever, as the incidence of this disease may be expected to increase at this time of year. Captains Howard N. Baier and Arthur H. Keeney, both of the 71st Station Hospital, discussed diseases of the upper part of the respiratory tract. Visiting officers, who arrived in Pusan at 4 a. m. January 14, were transported to the station hospital, where breakfast was served. The business meeting was in charge of Col. Charles P. Ward, surgeon, XXIV Corps. Among others present was Lieut. Col. Warner F. Bower, surgical consultant, who took part in the discussions.

OFFICER SELECTION BOARDS TO MEET

The Department of the Army announces that selection boards to recommend officers for promotion to regular Army grades from captain to lieutenant colonel will meet in Washington during the spring. The first board to study qualifications of majors for promotion to lieutenant colonels will meet early in February. It is expected that medical corps lieutenant colonels will be chosen from all lower grade officers with over sixteen years' service, and majors from those officers with over ten years' service on July 1. The Army emphasizes that under the Officer Personnel Law of 1947 officers not recommended for promotion by this year's board will not be considered to have been "passed over." Excepting only the initial promotion, the law provides that after an officer has been "passed over" for promotion on two consecutive occasions he will be removed from the service.

ARMY MEDICAL CORPS TEACHING BASIC SCIENCES

The Surgeon General has announced the opening of an experimental course in basic science for the Army's residents in training. Twenty-five selected trainees are attending the sixteen week postgraduate course at the Army Medical Center, Walter Reed General Hospital. Classes in laboratory and clinical work are being taught by men from leading hospitals and medical schools. Major General Bliss, the Surgeon General, commented: "Unless we make our standards as high as anywhere we cannot

expect to attract men to the Medical Corps." He explained that the army now has three hundred and seventy men in residency training. Dr. Irvine H. Page, director of research, Cleveland Clinic, was a speaker, and present for the opening were Col. Rufus L. Holt, commandant, Army Medical Department Research and Graduate School, and Col. Walter H. Moursund, director of training, Army Medical Center, who helped organize the course.

ATOMIC BOMB CHIEF PROMOTED

The President has sent to the Senate the name of Major Gen. Leslie R. Groves for promotion to the rank of lieutenant general under the new officer personnel law of 1947. General Groves is widely known for his work as head of the Manhattan Project, under which research, design, construction and operation of facilities for the atom bomb were developed. General Groves now is assistant to the chief of engineers, Army member of the military liaison to the Atomic Energy Commission and chief of the Armed Forces Special Weapons project.

COURSE IN ATOMIC MEDICINE

More than twenty medical schools throughout the country have accepted invitations to send representatives to the five day intensive course on the medical aspects of atomic explosion which began at the Army Medical Center, Washington, D. C., on January 12. These courses have been given once a month since last October but were opened to representatives of medical schools only since December. Although to date four hundred and thirty doctors have taken this special instruction, the enrollment for the February course, the last in the series, is expected to increase that number considerably. Others taking the course are drawn chiefly from the military and other federal agencies.

LETTERMAN EXHIBIT

Jonathan Letterman, the medical officer who revolutionized the system of care of the wounded in battle, is the subject of an exhibit at the Army Medical Library in the series Famous Men of Army Medicine. Letterman is considered by many to be the greatest name in military medicine. His plan—the ambu-

lance corps, the method of supply and the field hospital system—was thoroughly tested and proved in the Civil War, when he was medical director of the Army of the Potomac. It has since then been the model of armies all over the world and remained the basic structure of military medical care through World War II. Interesting items are Letterman's book, "Medical Recollections of the Army of the Potomac," published in New York in 1866, and charts showing the modern adaptations of his plan on D-Day and on VE-Day, "Evacuation in the European Theater of Operations."

ARMY MEDICAL LIBRARY NEEDS HELP

There are now seventeen vacancies on the staff of the Army Medical Library, as the result of the recent increase in its personnel ceilings. Of this number, ten positions are allocated to the professional grades, ranging from P-1 through P-3 (\$2,644.80 to \$4,149.60). While all positions in the Army Medical Library are under civil service, because of the unusual language difficulties encountered in this library the Civil Service Commission has authorized direct recruiting to fill certain P-2 and P-3 vacancies in the Catalog Division. The library will be glad to receive applications on standard form 57 from interested librarians.

ARMY AWARDS AND COMMENDATIONS

Lieutenant Colonel John A. Grove

The Bronze Star Medal has been awarded to Lieut. Col. John A. Grove, M. C., A. U. S., now of Newton, Kan. The citation read in part as follows: For meritorious service in connection with military operations, as surgical coordinator and orthopedic consultant, 15th Hospital Center, from June 6, 1944 to May 8, 1945. Lieutenant Colonel Grove, with professional brilliance and remarkable devotion to duty, assisted in the development of "specialty" general hospitals which rendered invaluable support to the Medical Department in achievement of its overseas mission. Through his capacity for selection of personnel and his genius for research in specialized fields, the care of wounded men in the hospitals under him was lifted to a peak of excellence. Dr. Grove graduated from Northwestern University Medical School in 1937 and entered military service in July 1942.

NAVY

RESERVE CONSULTANTS BOARD

At the annual meeting of the Reserve Consultants Board to the Bureau of Medicine and Surgery at Bethesda, Md., January 9, the Surgeon General, Rear Adm. Clifford A. Swanson, spoke on matters pertaining to legislation; Capt. W. A. Wylie (MC), chief, Naval Reserve Unit of the Bureau, on organization of units of the Naval Reserve, and Capt. O. L. Burton (MC), chief, Division of Preventive Medicine in the bureau, discussed preventive medicine as it relates to the program of the medical department. The Reserve Board, which is composed of civilian specialists in various fields of medicine, confers with the bureau concerning its graduate medical training program and specialty board requirements of medical officers. In addition to the board members and medical officers of the Navy, the following civilian guests attended the conference: Drs. H. P. Saunders and W. A. Bloedorn, dean, George Washington University Medical School, Washington, D. C.

NAVY AWARDS AND COMMENDATIONS

Dr. Morris Fishbein

President Truman has awarded the Certificate of Merit to Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, in recognition of his "outstanding efforts as Chairman of the Committee on Information of the National Research Council, which proved to be an invaluable contribution to the war effort of the United States." In notifying Dr. Fishbein of the honor, Comdr. G. E. Pierce of the U. S. Navy, secretary of the Civilian Awards

Board in Washington, D. C., said that the award is given to "civilians for outstanding fidelity and meritorious conduct which aided in the war effort against common enemies of the United States and its allies in World War II." The certificate was presented January 23 in a brief ceremony at the American Medical Association headquarters by Rear Admiral J. Cary Jones, Commandant of the Ninth Naval District, Great Lakes, Ill.

PERSONALS

Rear Admiral C. A. Swanson, Surgeon General of the Navy, left Washington, D. C., on January 29 to visit naval medical activities in Pensacola, Jacksonville and Key West, Fla. Admiral Swanson spoke on medical and nutritional conditions in Europe and the Near East at each of the naval medical activities.

Admiral Swanson reviewed the world's medical and public health situation in an interview broadcast on the "Farmer from Washington" program from Arlington, Va., January 25. He also addressed the faculty and student body of the University of Virginia School of Medicine at Charlottesville January 16 on preventive medicine and the need for doctors in the field.

Rear Adm. Lamont Pugh (MC), assistant chief, Bureau of Medicine and Surgery, represented the bureau at the January lecture in the Army Medical Corps series at Walter Reed General Hospital. Admiral Pugh spoke on the need for coordination of military and civilian medical services. The guest lecturer was Dr. Frank Lahey, Boston, whose subject was "Thyroid Diseases and Antithyroid Agents."

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Appoint New Professors.—Edward L. Tatum, Ph.D., professor of microbiology at the Institute of Microbiology, Yale University, New Haven, Conn., has been appointed professor of biology at Stanford University, effective September 1948. A graduate of the University of Wisconsin, 1935, Dr. Tatum was a research associate and later an assistant professor of biology at Stanford from 1937 to 1945, when he accepted an associate professorship at Yale.

Dr. John A. Luetscher Jr., assistant professor of medicine at Johns Hopkins University, Baltimore, will join the faculty in the fall as associate professor of medicine. He received his M.D. degree from Johns Hopkins University in 1937 and has been on the medical school's faculty since 1940.

CONNECTICUT

Conferences on Psychiatry.—The Institute of Living, devoted to the treatment of nervous and mental diseases, on January 14 inaugurated its fourteenth annual series of conferences on the progress of psychiatry. The remaining lectures are as follows:

February 18, Dr. William Sargent, London, England, Observations on Abreactions with Drugs.

February 25, Dr. Franz G. Alexander, Chicago, What Is a Psychoneurosis?

March 3, Dr. Henry W. Brosin, Chicago, Clinical Aspects of Rorschach Testing.

March 10, Dr. A. Warren Stearns, Boston, The Milieu in Which the Psychiatric Case Swims.

DISTRICT OF COLUMBIA

The Kellogg Medical Lectures.—The George Washington University School of Medicine, Washington, D. C., is presenting a series of eighteen evening lectures for physicians of the Washington area from January through April. The series is known as the Kellogg Medical Lectures in recognition of grants received for graduate medical education from the W. K. Kellogg Foundation of Battle Creek, Mich. Remaining lectures include:

February 10, Dr. Richard L. Varco, Minneapolis, Preoperative and Postoperative Care in Elective Abdominal Surgery.

February 17, Dr. Douglas A. Thom, Boston, Child Guidance.

February 19, Fred W. Rankin, Sc.D., Louisville, Ky., Carcinoma of the Colon and Rectum.

February 24, Dr. Nolan D. C. Lewis, New York, Psychotherapy for the General Physician.

February 26, Dr. Robert L. Patterson, Pittsburgh, Use of Blood Transfusions; Organization and Operation of Blood Banks.

March 2, Dr. Everts A. Graham, St. Louis, Problems Confronting the Surgeon.

March 4, Drs. James L. Pool and Israel S. Wechsler, New York, Conference on the Paralyzed Patient.

March 9, Dr. Herman E. Hilleboe, Albany, N. Y., The Minimal Tuberculosis Lesion.

March 11, Dr. Edwin C. Hamblen, Durham, N. C., Human Infertility.

March 16, Dr. Thomas Francis Jr., Ann Arbor, Mich., Prevention of Influenza.

March 18, Dr. Nicholson J. Eastman, Baltimore, Obstetric Factors in Infant Survival; Dr. Priscilla White, Boston, Diabetes in Pregnancy.

March 23, Problems in Endocrine Therapy (Panel).

March 25, Parent-Newborn Adaptation (Panel).

March 30, Dr. Lewis Dexter, Boston, Curable Heart Disease.

April 6, Dr. Paul D. White, Boston, Prevention of Heart Disease.

April 13, Dr. Julian M. Ruffin, Durham, N. C., Status of Vagotomy in the Treatment of Peptic Ulcer.

ILLINOIS

Lectures for County Societies.—The Scientific Service Committee of the Illinois State Medical Society has arranged the following lectures for county medical societies: La Salle County, in La Salle, February 12, Dr. John M. Huffman, Chicago, "Diagnosis and Treatment of Early Carcinoma of the Cervix"; Will-Grundy County, in Joliet, February 12, Dr. Chester Coggeshall, Chicago, "Recent Advances in Diabetes," and February 26, Dr. Emmet B. Bay, Chicago, "Drug Administration in Heart Disease"; Logan County, in Lincoln, February 19, Dr. Winston H. Tucker, Evanston, "Fluorine and Dental Caries." The Educational Committee of the state medical society has arranged a lecture by Dr. Pliny R. Blodgett, Chicago Heights, for February 18 at the Forest Ridge Woman's Club on "Blood Pressure"; another by Dr. George H. Rezek, Chicago,

at the Belmont's Women's Club, Chicago, February 18 on "Facing the Forties," and one by Dr. Franklin R. Fitch, Chicago, for February 23 at the South Edgebrook Woman's Club in Chicago, on "Venereal Disease as a Public Health Problem."

Chicago

National Heart Week Program.—The Chicago Heart Association is sponsoring its National Heart Week Dinner February 10 in the Crystal Room, Union League Club, at 6 p. m. Dr. Morris Fishbein, Editor, THE JOURNAL, will act as toastmaster. Dr. Howard A. Rusk, New York, will speak on "Rehabilitation and the Heart"; Dr. Wingate M. Johnson, Winston-Salem, N. C., "The Years After Forty," and Dr. Arlie R. Barnes, Rochester, Minn., president of the American Heart Association, "The Public's Stake in the Problem of Heart Disease." Demonstrations and exhibits may be seen before dinner and after the program. The clinical section of the Chicago Heart Association will meet February 12 from 10 a. m. to noon in the auditorium, Sprague Home, School of Nursing, Presbyterian Hospital. Among the subjects on the program are nutritional considerations in the long range care of coronary thrombosis, management of chronic cardiac decompensation, physiologic methods in the diagnosis of congenital heart disease and unipolar electrocardiographic study. All physicians are invited to this meeting.

Annual Four Day Clinical Conference.—All physicians are invited to attend the Annual Clinical Conference of the Chicago Medical Society at the Palmer House, Chicago, March 2-5. The program has been planned to appeal to both general practitioner and specialist. Scientific and technical exhibits will be presented. The program is as follows:

TUESDAY

Tinsley R. Harrison, Dallas, Texas, Clinical Recognition of the Arrhythmias.

John D. Camp, Rochester, Minn., Roentgenologic Aspects of Malacic Diseases of Bone.

Edwin P. Lehman, Charlottesville, Va., Clinical Diagnosis of Infection Following Chemotherapy and Antibiotics.

Waltman Walters, Rochester, Minn., Present Status of Surgical Intervention in Peptic Ulcer.

Axel N. Arneson, St. Louis, Ratiocination in the Treatment of Cancer of the Cervix Uteri.

Francis M. Rackemann, Boston, The Doctor and the Patient with Asthma.

Franklin G. Ebaugh, Denver, Anxiety Syndromes in Clinical Medicine.

Chester M. Jones, Boston, Diagnostic and Therapeutic Value of Liver Function Tests.

George G. Smith, Brookline, Mass., Treatment of Prostatic Carcinoma.

WEDNESDAY

Harold C. Lueth, Omaha, Neb., Clinical Considerations in the Treatment of Bright's Disease.

Claude F. Dixon, Rochester, Minn., Safety Factors in Surgery of the Colon.

George M. Piersol, Philadelphia, Possibilities of Physical Medicine from the Standpoint of the Internist.

John S. L. Browne, Montreal, Canada, Response of the Adrenal Cortex to Disease and Injury.

William B. Castle, Boston, Differential Diagnosis of Splenomegaly.

Earl T. Engle, New York, Diagnosis and Treatment of Male Sterility.

R. Arnold Griswold, Louisville, Ky., Physiologic Changes Resulting from Vagotomy for Peptic Ulcer.

William S. Middleton, Madison, Wis., Rickettsial Infections in the United States.

Roscoe L. Sensenich, South Bend, Ind., President-Elect of the American Medical Association, General Management of Hypertension.

THURSDAY

Paul C. Colonna, Philadelphia, Diagnosis of Lesions in the Knee Joint.

Otto H. Schwarz, St. Louis, Chronic Subinvolution of the Uterus, Its Pathology and Clinical Significance.

Kenneth E. Appel, Philadelphia, Psychoanalytic Perspectives in Medicine.

Cameron Haight, Ann Arbor, Mich., Surgical Treatment of Mediastinal Tumors.

Clement A. Smith, Boston, Physiologic Advantages and Disadvantages of Newborn Patients.

John M. Adams, Minneapolis, Primary Respiratory Disease, Pathogenesis and Prevention.

E. Cowles Andrus, Baltimore, Factors in the Prognosis of Disease of Coronary Arteries.

James S. Speed, Memphis, Tenn., Treatment of Difficult Nonunions of the Long Bones.

Panel on Obstetrics.

FRIDAY

Carl W. Laymon, Minneapolis, Cancer of the Skin.

Herbert F. Traut, San Francisco, Functional Uterine Bleeding.

William F. Holbrook, Tucson, Ariz., Rheumatic Fever.

Alton Ochsner, New Orleans, Bronchogenic Carcinoma.

Francis W. Lynch, St. Paul, Current Views on the Treatment of Syphilis.

Charles C. Higgins, Cleveland, Management of Patients with Renal Lithiasis.

Francis E. LeJeune, New Orleans, Treatment of Early Carcinoma of the Larynx.

William E. Grove, Milwaukee, Wis., Craniocerebral Post-Traumatic Syndrome, A Practical Consideration.

William L. Bradford, Rochester, N. Y., Streptomycin Therapy. Clinicopathologic Conference.

INDIANA

Indianapolis Society Offers Aid to Prosecutor.—The Indianapolis Medical Society, in a letter to Prosecutor Judson Stark, has offered its assistance in the prosecution of Dr. Frederick E. Crum, Indianapolis, charged with performing an abortion on a young woman who later died. The physician has been arrested twice before on abortion charges but never has been convicted. The physician, 63 years of age, has been cited to appear before the state medical registration board to answer charges of "gross immorality." Dr. Crum is now free under \$2,000 bond.

Drs. Kaadt and Smith Lose Licenses.—The Indiana Supreme Court has handed down a decision declaring that the State Board of Medical Registration and Examination was acting within its authority in revoking the medical practice license of Dr. Peter S. Kaadt, South Whitley, a graduate of Rush Medical College, Chicago, 1895, on the grounds of "gross immorality." Dr. Peter S. Kaadt and his brother, Dr. Charles F. Kaadt, were accused of selling "worthless diabetes cures" at their sanatorium. Dr. Charles F. Kaadt, a graduate of Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1902, surrendered his license without a hearing. The Indianapolis Better Business Bureau brought charges against the Drs. Kaadt.

Dr. George F. Smith, formerly of Terre Haute, has surrendered his license to practice medicine in Indiana. He was charged by the Indianapolis Better Business Bureau with claiming "absolute and complete cures" for cancer, diabetes, syphilis and other diseases. Dr. Smith, a graduate of Washington University School of Medicine, St. Louis, 1910, denied the charges in an appearance before the State Board of Medical Registration and Examination but agreed to cancellation of his license. He told the board he is now practicing in Chicago.

KANSAS

Red Cross Opens Blood Collecting Center.—The Sedgwick County (Wichita) unit of the national peacetime blood collection program of the American Red Cross was opened formally January 16 by Basil O'Connor, chairman. Residents of the county donated 4,634 pints of blood to the center, and women workers contributed 15,000 hours of work during the preceding week. Other officials of the national office attended the ceremonies.

MARYLAND

Outbreak in Baltimore of Grain Itch.—The Baltimore City Health Department's Division of Industrial Hygiene recently aided in diagnosing a peculiar rash that appeared among 12 employees of a local broom factory. The mite which caused the rash, identified as *Pediculoides*, and the *Angoumois* grain moth *Sitotroga cerealella*, which acts as one of the normal hosts of the mite, were found. Nine days after the first call for aid the plant was being sprayed with piperonyl butoxide and the outbreak was brought under final control. It is thought that the broom corn may in this instance have become infested in a freight car previously used to transport grain, for no such difficulty had been experienced in the factory from shipments brought by truck. Eight other broom factories in the city, employing about two hundred workers, were visited and gave no history of grain itch. In its sixty years' existence employees of the affected plant had had no similar experience.

NEW YORK

Tuberculosis Society Meetings.—The annual conference of the New York Tuberculosis and Health Association will be held March 9 at the Hotel Pennsylvania, New York. Authorities on tuberculosis, social hygiene and health education will present papers. The Tuberculosis Sanatorium Conference of Metropolitan New York will meet simultaneously.

Graduate Instruction at Port Jefferson, Watertown and Liberty.—The Medical Society of the State of New York in cooperation with the state department of health has arranged the following graduate programs: The Jefferson County Medical Society will hear Dr. Gray H. Twombly, New York, Thursday, February 12, at the Hotel Woodruff, Watertown, at 8 p.m. speaking on "Recognition and Treatment of Pelvic Cancer." A teaching day on kidney disease has been arranged for the staff of the John T. Mather Memorial Hospital, Port Jefferson, on February 19 beginning at 11:30 a.m. Dr. Louis F. Bishop Jr., New York, will speak on "Hypertension and Hypertensive Renal Disease;" Dr. Edward C. Coats, New York, on "Suppurative and Calculous Diseases of the Kidneys," and Dr. William Goldring, New York, on "Clinical Aspects of Glomerulonephritis." Dr. Frederick N. Marty, Syracuse, will address the Sullivan

County Medical Society February 25 at 8:30 p.m. at the Lenape Hotel, Liberty, on "Plasma Therapy and Whole Blood Transfusion."

New York City

Fifth Harvey Lecture.—Hermann J. Muller, Sc.D., professor of zoology, Indiana University, Bloomington, will deliver the fifth Harvey Lecture of the current series at the New York Academy of Medicine February 19 on "Evidence of the Precision of Genetic Adaptation."

Research on Epilepsy.—An anonymous gift of \$5,000 for research in epilepsy has been received at the Columbia University College of Physicians and Surgeons from a grateful father whose epileptic son regained his health. The money will be used to continue research in the Neurological Institute and the Baird Foundation Clinic.

Regulation of Coin-Operated Washing Machines.—The estimated twenty thousand coin-operated washing machines in apartment houses in the city will be regulated by the Board of Health after March 1 to enforce sanitary regulations concerning hot water and drainage. According to the *New York Times*, 90 per cent of these machines are owned not by the landlords but by operating companies. Owners will be responsible for adequate supplies of hot water. The sanitary code was amended to require water to be heated to 140 F. (60 C.) rather than to the present 200 F. (94 C.). At the same meeting the health authorities tightened the regulations concerning commercial laundries and hand and diaper laundries.

Savings Banks Endow Fellowship.—An endowed fellowship fund for medical research honoring the memory of the late Philip A. Benson, New York, has been established at the Long Island College of Medicine. Income from the fellowship of \$34,200 will be awarded on an annual basis and will defray, in part, compensation of a man or woman selected to do investigative work in one of the college's basic science or clinical departments. Funds to support this project were subscribed by the savings banks of the state and other interested friends and associates. Mr. Benson, who for many years was president of the Dime Savings Bank, had served as a trustee of the Long Island College of Medicine for twelve years and as chairman of its finance committee.

MICHIGAN

February Is Immunization Month in Michigan.—Local health departments and medical societies, the Michigan State Medical Society and the state department of health in February opened a campaign of immunization designed to reach every child in the state. The campaign will include the education of parents in the necessity of protection. Each county has made its own plans with the local health department coordinating and, where necessary, supplementing the work of practicing physicians of the area. No more than half a dozen counties in the state are adequately immunized to prevent an epidemic of diphtheria, according to the state health department, and whooping cough is appearing at a rate of more than 200 cases a week. The practicing physicians and local health departments will give the vaccines and toxoids, prepared by the state department of health, to every child whose parents wish him to have them without regard to whether the parents can pay for the treatment.

MISSOURI

Dr. Seelig Honored.—Dr. Major G. Seelig, for many years on the staff of the Barnard Free Skin and Cancer Hospital, St. Louis, was recently guest of honor at a dinner given by members of the staff and board members at Barnard. Dr. Seelig, now aged 73, is retiring and expects to make his future home in California.

PENNSYLVANIA

State Society Establishes the Benjamin Rush Awards.—The Pennsylvanian and the nonmedical lay organization which make the greatest contributions to the health of the people of the state will be presented the Benjamin Rush Award, an honor to be conferred each year by the Medical Society of the State of Pennsylvania. Service may have been made through study, research or other methods which have benefited the health of the general public of the state. Names of candidates for the awards will be received before March 31 by the board of trustees of the medical society from the county medical societies. This year's awards will be made at the centennial celebration in Philadelphia in October. Named after Benjamin Rush, one of Pennsylvania's leading medical men, surgeon-general in the Continental Army and signer of the Declaration of Independence, the award will be in the form of a bronze plaque containing a bas-relief of Dr. Rush.

Philadelphia

Blood Donor Center Near Completion.—The new \$50,000 Blood Donor Center, under construction at Jefferson Medical College and Hospital, is nearing completion. The new center will be integrated with Jefferson's blood-transfusion-plasma unit, which is under the direction of Dr. Lowell A. Erf.

Annual Fraternity Lecture.—The Phi Delta Epsilon annual lectureship at Jefferson Medical College was delivered by Dr. Harry Goldblatt, Los Angeles, on January 13 in the college assembly hall, on "The Renal Origin of Hypertension." Before the lecture a banquet was held at the Warwick Hotel in honor of Dr. Goldblatt.

PUERTO RICO

Group Arrives to Survey Medical Needs.—For the purpose of conducting a two week survey of medical needs of Puerto Rico and the Virgin Islands, at the invitation of Gov. Jesus T. Piñero, and with the approval of Secretary of the Interior Julius Krug, a group of members of the American Medical Association arrived in San Juan January 20, headed by Dr. Ernest E. Irons, Chicago, Secretary of the Board of Trustees of the American Medical Association. Other members of the mission are Dr. William L. Benedict, eye specialist of the Mayo Clinic, Rochester, Minn.; Dr. George M. Saunders, epidemiologist, Washington University, St. Louis; Dr. Edgar C. Person, surgeon of Cornell University, New York; Dr. John H. Willard, gastrointestinal specialist of Philadelphia; Dr. John H. Youmans, tuberculosis and nutrition specialist, University of Illinois School of Medicine; Dr. Heyworth N. Sanford, pediatric specialist, Presbyterian Hospital, Chicago; Dr. James B. McLester, tuberculosis and nutrition specialist, Birmingham, Ala.; Dr. William A. Morgan, who acted as coordinator for the American Medical Association and the United States Department of the Interior; Miss Edna Newman, nurse of Cook County Hospital, Chicago; Miss Catherine Sandford, Mrs. Ernest E. Irons, Spencer Irons, Mary Hill, William Morgan and Elizabeth Morgan. A special program consisting of lectures, round tables on various topics, visits to hospitals and other institutions was prepared by the local branch of the American Medical Association, under the direction of Dr. Juan A. Pons, commissioner of health of Puerto Rico, for the visiting physicians and specialists. After visiting St. Thomas, Virgin Islands, and Ciudad Trujillo, Dominican Republic, the group will return to New York via Pan American plane.

GENERAL

"If Your Child Stutters."—A leaflet for distribution to parents of stuttering children has been prepared as an initial step to eliminate sources of tension in the home. Physicians may obtain copies of the leaflet by writing to the Speech Information Bureau, National Hospital for Speech Disorders, 61 Irving Place, New York 3.

Electroencephalographers Meeting.—The Eastern Association of Electroencephalographers will meet at the Montreal Neurological Institute, Montreal, Canada, February 27-29. Among the subjects for discussion are "Operation for Focal Epilepsy with Electroencephalograms," "Electroencephalographic Findings in Patients with Brain Tumors" and "Brain Potassium in Relation to Behavior."

China Honors Missionary Doctor.—In tribute to the memory of Dr. Lee S. Huizenga, missionary physician in Shanghai who aided China in her fight against leprosy and tuberculosis, China's first national tuberculosis stamp is appearing. Dr. Huizenga founded China's two largest tuberculosis sanatoriums, both in Shanghai. He died July 16, 1945 after two and one-half years in a Japanese prison camp.

Hospitals and Homes Convention.—The annual meeting of the Board of Hospitals and Homes of the Methodist Church and the annual convention of the National Association of Methodist Hospitals and Homes will be held in Cincinnati February 17-19. Delegates will include hospitals and home administrators, chairmen of conference boards of hospitals and homes, members of boards of trustees of hospitals and homes, presidents of women's auxiliaries, chaplains and religious directors.

Scholarship for Training Hard of Hearing Teacher.—The American Hearing Society, through the Kenfield Memorial Fund, is offering a \$100 scholarship to any prospective hard of hearing teacher of lip reading to hard of hearing adults who lives in the United States and who can meet the requirements, bachelor's degree or equivalent and professional training in lip reading. The scholarship must be used within one year from granting of the award, and applications must be filed between March 1 and May 1, 1948 with Miss Rose V. Feilbach, 2431 14th Street N.W., Washington 9, D. C.

Poliomyelitis Exhibits.—Scientific exhibits which graphically depict data on poliomyelitis are available for annual meetings of state and regional medical associations. Prepared by the National Foundation for Infantile Paralysis, the exhibits cover diagnostic criteria, technic of muscle testing, histopathology and syndromes of bulbar poliomyelitis as well as results of scientific research on virus characteristics, role of flies and sewage and a working hypothesis of transmission during epidemics. Information may be had by writing to the Director of Scientific Information, National Foundation for Infantile Paralysis, 120 Broadway, New York 5.

Schering Award Winners.—Paul J. Kopsch, Richmond Hill, Long Island, N. Y., a senior medical student at the Long Island College of Medicine, is the recipient of the Schering Award for 1947 for his paper on "The Clinical Use of Androgens in the Female." He received the first prize of \$500. The second prize of \$300 was awarded to Robert C. Foreman, Western Reserve Medical School, Cleveland, and the third prize of \$200 to Dr. Bernard L. Rosenberg, recently graduated from Georgetown University Medical School, Washington, D. C. Forty-three contestants received honorable mention. The Schering Award is given annually for the best manuscripts prepared on a designated phase of endocrinology. Medical students of the United States and Canada are eligible for the contest.

Postdoctorate Research Fellowships.—The Yale University School of Medicine, New Haven, announces that applications are now being accepted for postdoctorate research fellowships for 1948-1949. These are the Alexander Brown Cox Memorial Fellowships in the Biological Sciences, established in 1927; and the James Hudson Brown Memorial Fellowships, established in 1946 and available for promising applicants qualified to undertake research in the medical sciences, including clinical medicine and public health. The fellowships are open to graduates who hold the Ph.D. or M.D. degree and are awarded for one year but may be renewed. The annual stipend, usually from \$2,500 to \$3,500, is determined by individual circumstances. An additional sum may be assigned to the department to defray in part the cost of the proposed investigation. The closing date for applications is March 1. Information may be secured from Dr. C. N. H. Long, Dean of the Yale University School of Medicine, 333 Cedar Street, New Haven 11, Conn.

FOREIGN

Harofé Haivri, The Hebrew Medical Journal.—The fall issue of *Harofé Haivri*, or *Hebrew Medical Journal*, volume 2, 1947, contains a section dealing with health in Palestine. Dr. L. Olitzki of the Hebrew University writes on the "Contribution of Bacteriologists for the Control of Infectious Diseases in Palestine"; Dr. A. Wolowelsky on "Present Status of Tuberculosis in Palestine," and Ernst Wodak on "Plastic Surgery." Under the heading of "Historical Medicine" Dr. Leon Nemoj of Yale University, New Haven, Conn., writes on the great philosopher and physician of the thirteenth century—Ibn Kammuna. Dr. Yom-Tov Levinsky discusses in his article on "Folklore Medicine" the legends surrounding frogs and spiders as healing agents. The editor is Dr. Moses Einhorn. The original articles are summarized in English. The editorial office of the *Hebrew Medical Journal* is at 983 Park Avenue, New York 28.

CORRECTION

Liver Extract in Treatment of Cirrhosis of Liver.—The first sentence in this abstract from the *Review of Gastroenterology* for October 1947 (THE JOURNAL, January 17, p. 210) should have read: Rawls and Ancona report on 22 patients with cirrhosis, 18 with Laennec's and 4 with biliary cirrhosis, who received treatment for four months or longer.

Marriages

CALVIN WINFIELD APPLEWHITE, New Orleans, to Miss Laverne Louise Viverette of Union, Miss., Sept. 5, 1947.

JAMES ALTO WARD JR., Birmingham, Ala., to Miss Audrey Mary Charbonnet of New Orleans, Oct. 27, 1947.

LEWIS EDWARD JONES, Norfolk, Va., to Miss Margaret Louella Williams of Milford, Del., Sept. 23, 1947.

MANUEL DE MELLO, New Bedford, Mass., to Miss Helen Pimental of Mattapoisett, Sept. 17, 1947.

Deaths

Clarence Orion Cheney, White Plains, N. Y., for many years professor of clinical psychiatry, Cornell University Medical College in New York, died Nov. 4, 1947, aged 60, of cerebral hemorrhage. Dr. Cheney was born in Poughkeepsie, N. Y., July 10, 1887. After graduating from Columbia University College of Physicians and Surgeons, New York, 1911, he became pathologist at the Manhattan State Hospital. In 1917 he was named assistant director at the New York State Psychiatric Institute, serving until 1922, when he became assistant superintendent of the Utica State Hospital. Later he was medical superintendent of the Hudson River State Hospital, Poughkeepsie. He was medical director at the New York State Psychiatric Institute and Hospital, Columbia-Presbyterian Medical Center in New York, from 1931 to 1936, when he became medical director at the New York Hospital-Westchester Division, in White Plains. He was instructor in psychiatry at Cornell, at the University and Bellevue Hospital Medical College, and at the Syracuse University College of Medicine. Later he was professor of psychiatry at Columbia. In 1944 Columbia University awarded him its medal for professional distinction and public service. He was a president and secretary of the American Psychiatric Association, and when the association established a certification board in 1933 he was the first chairman. He was also a fellow of the American College of Physicians and the New York Academy of Medicine; a president of the New York Psychiatric Society; member of the American Medical Association; formerly secretary and chairman of the section on neurology and psychiatry, Medical Society of the State of New York; past president of the Dutchess County Medical Society; honorary member of the St. Louis Medical Society, and corresponding member of the Royal-Medico Psychological Association (England). Dr. Cheney was a member of the National Committee for Mental Hygiene, a charter member of the American Board of Psychiatry and Neurology and representative of the New York State Medical Society on the Board of Psychiatric Examiners of the New York State Department of Mental Hygiene. During World War I Dr. Cheney served on the local draft board and the Cornell Medical Advisory Board, and during World War II was psychiatrist to the medical advisory board of Westchester County and psychiatric examiner for the selective service induction staff in New York. He was awarded the Congressional Selective Service Medal in 1945. He was consulting psychiatrist to numerous hospitals and since 1946 had been consultant for the Veterans Administration in New York. Dr. Cheney published many studies dealing with psychiatry and the administration of mental hospitals. He was an associate editor of the *American Journal of Psychiatry* and the *Psychiatric Quarterly*.

Kingsley Roberts © New York; born in New York Dec. 29, 1893; Jefferson Medical College of Philadelphia, 1920; fellow of the American College of Surgeons and the New York Academy of Medicine; member of the American Public Health Association, American Hospital Association, American Public Welfare Association, Academy of Political Science and American Academy of Political and Social Science; served in the U. S. Naval Reserve during World War I; medical director of the Bureau of Cooperative Medicine from 1936 to 1941, when he became executive director of the Medical Administration Service; chairman of the medical advisory board of the Group Health Cooperative, Group Health Federation of America; affiliated with the Flower and Fifth Avenue Hospital, where he died Nov. 21, 1947, aged 53, of acute hepatitis.

William John L. McCullough © Washington, Pa.; born in Crosscreek, Pa., Feb. 10, 1880; Jefferson Medical College of Philadelphia, 1905; past president of the Washington County Medical Society; served during World War I; surgeon of the medical advisory board during World War II; member of the American Association of Industrial Physicians and Surgeons; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; chief surgeon of the Hazel Atlas Glass Company; affiliated with the Washington Hospital; died Nov. 3, 1947, aged 67, of coronary thrombosis.

George Aiken Dowling © Seattle; born Little Valley, Minn., Jan. 24, 1879; Northwestern University Medical School, Chicago, 1905; specialist certified by the American Board of Internal Medicine; member of the North Pacific Society of Internal Medicine; fellow of the American College of Physicians; past president of the Pacific Northwest Medical Association; served during World War I; cited for selected service work during World War II; served as attending physician and secretary of the Virginia Mason Hospital; died recently, aged 68, of cerebrovascular accident and hypertension.

Gerrit F. Blauvelt © Nyack, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1873; past president of the Rockland County Medical Society and vice president of the Medical Society of the State of New York; one of the founders, and for many years on the staff and honorary chairman of the board of managers of Nyack Hospital; died Nov. 12, 1947, aged 98, of arteriosclerosis.

Alexander Borland, Pontiac, Mich.; University of Louisville (Ky.) Medical Department, 1905; member of the American Medical Association; a medical officer during World War I; served as director of health at the Michigan Agricultural College in East Lansing; for two years deputy coroner of Oakland County; affiliated with St. Joseph Mercy and Pontiac General hospitals; died recently, aged 72.

Laura Mary Hobbs Bourne © Miami, Fla.; Western Reserve University School of Medicine, Cleveland, 1932; interned at the Columbia Hospital in Wilkinsburg, Pa., and the Biltmore Hospital; member of the courtesy staff of the Jackson Memorial Hospital, where she died recently, aged 42.

Adrian LeRoy Cambre © Atlanta, Mo.; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1907; died Nov. 3, 1947, aged 67, of cerebral hemorrhage.

Edward D. G. Conkling, Newark, N. J.; New York Homeopathic Medical College and Hospital, New York, 1890; died in the East Orange (N. J.) General Hospital, Nov. 5, 1947, aged 85, of suppurative diverticulitis.

John Webster Cressler, Wilkes-Barre, Pa.; Jefferson Medical College of Philadelphia, 1913; member of the American Medical Association; died recently, aged 59, of cardiovascular disease.

William Kenneth Edwards © Centerville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1913; formerly secretary of the Hickman County Medical Society; served during World War I; died Nov. 16, 1947, aged 57, of coronary occlusion.

John Marion Ellis, Mount Pleasant, Texas; College of Physicians and Surgeons, Little Rock, 1911; died recently, aged 61, of nephritis and hypertension.

Edward P. Goodrich, Winterport, Maine; Baltimore Medical College, 1896; member of the American Medical Association; county medical examiner; for many years state district health officer and state physician, residing in Lewiston; died recently, aged 73, of cerebral thrombosis.

Daniel Webster Gross, Worthington, Minn.; Jenner Medical College, Chicago, 1899; died Nov. 2, 1947, aged 82, of cirrhosis of the liver.

William Hall, Halls, Tenn.; Memphis (Tenn.) Hospital Medical College, 1911; died in the Baird-Brewer Hospital, Dyersburg, recently, aged 67, of undulant fever.

John Moore Hickman, Westville, Ill.; Medical College of Ohio, Cincinnati, 1896; died Nov. 18, 1947, aged 75, of carcinoma of the stomach.

Jesse S. Hopkins, Nashville, Ark.; University of Nashville (Tenn.) Medical Department, 1906; died Nov. 24, 1947, aged 69.

Clarence P. Lathrop, Hastings, Mich.; Chicago Homeopathic Medical College, 1890; member of the American Medical Association; founder and past president of the Barry County Medical Society; for many years county coroner; formerly assistant superintendent of the Ionia (Mich.) State Hospital; died Nov. 13, 1947, aged 77, of coronary occlusion.

Philip Max Le Beau, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; affiliated with the Belmont Hospital, where he died Nov. 9, 1947, aged 62, of coronary heart disease, chronic peptic ulcer and arteriosclerosis.

Ruffin Longest, Wynne, Ark.; University of Nashville (Tenn.) Medical Department, 1899; died recently, aged 78, of carcinoma of the colon and liver.

William Halbert Martin, Holly Grove, Ark.; University of Tennessee College of Medicine, Memphis, 1927; member of the American Medical Association; died in St. Joseph's Hospital in Memphis, Tenn., recently, aged 46, of heart disease.

James Egan McLoone © La Crosse, Wis.; Rush Medical College, Chicago, 1923; past president of the La Crosse County Medical Society; fellow of the American College of Surgeons; member of the Wisconsin Surgical Society; district surgeon for the Milwaukee and Burlington railroads; affiliated with St. Francis Hospital; shot and killed Nov. 14, 1947, aged 49.

Samuel P. Mengel * Wilkes-Barre, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1894; member of the House of Delegates of the American Medical Association from 1924 to 1929 and from 1931 to 1940; member of the founders group of the American Board of Surgery; fellow of the American College of Surgeons; affiliated with the Mercy and Wilkes-Barre General hospitals; chief surgeon for Lehigh Valley Coal Company; died Nov. 11, 1947, aged 77, of carcinoma of the thyroid.

Jennie E. Nesbitt, Vallejo, Calif.; Hahnemann Medical College of the Pacific, San Francisco, 1905; died in Orange recently, aged 86, of cerebral vascular accident and bronchopneumonia.

Upton Darby Nourse * Dawsonville, Md.; Georgetown University School of Medicine, Washington, D. C., 1900; served as president of the Montgomery County Medical Society; affiliated with the Frederick Memorial Hospital in Frederick, where he died Nov. 14, 1947, aged 71, of acute coronary thrombosis.

William Francis Peters, Homer City, Pa.; Medico-Chirurgical College of Philadelphia, 1916; served during World War I; died recently, aged 59, of heart disease.

Ellis Powell * West Monroe, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1918; president of the parish and city boards of health; affiliated with St. Fran-

De Mont Ryan * Dryden, N. Y.; Syracuse University College of Medicine, 1904; for many years president of the board of education; died recently in the Cortland (N. Y.) Hospital, aged 71, of cerebral thrombosis.

Ira Clarence Stayner, Spencerville, Ohio; Washington University School of Medicine, St. Louis, 1904; served as a member of the school board in Spencerville and as assistant physician for the Ohio State Institution for Feeble-minded at Apple Creek; died recently, aged 78, of cardiovascular renal disease.

John Wheeler Tullis, Long Beach, Calif.; Kansas City (Mo.) Medical College, 1889; served as town councilman and member of the school board; died Oct. 28, 1947, aged 95, of chronic myocarditis.

Guy Wallace, Oakland, Calif.; College of Physicians and Surgeons, Los Angeles, 1917; died in the Providence Hospital Nov. 4, 1947, aged 61, of cerebral hemorrhage.

Alonzo Higbee Waterman * Chicago; the Hahnemann Medical College and Hospital, Chicago, 1906; fellow of the American College of Physicians; specialist certified by the American Board of Internal Medicine; served on the staff of Henrotin and Illinois Masonic hospitals; died Nov. 26, 1947, aged 67, of coronary thrombosis.



LIEUT. (JG) JOSEPH A. FEDEROWICZ *
(MC) U. S. Navy, 1916-1945



LIEUT. COMDR. GEO. R. HOGSHIRE JR.
(MC) U. S. Navy, 1906-1944



COMDR. THOMAS H. HAYES
(MC) U. S. Navy, 1897-1945

cis Sanitarium and Monroe Charity Hospital in Monroe; died in the Touro Infirmary, New Orleans, Nov. 12, 1947, aged 54, of adenocarcinoma of the liver with metastases and Laennec's cirrhosis.

Albert Zrunek * Chicago; Univerzita Komenského Fakulta Lékařská, Bratislava, Czechoslovakia, 1922; affiliated with the Chicago Memorial Hospital, where he died Nov. 19, 1947, aged 54, of coronary occlusion.

KILLED IN ACTION

Joseph Anthony Federowicz * Acting Assistant Surgeon Lieutenant (jg), U. S. Navy, Philadelphia; Jefferson Medical College of Philadelphia, 1942; interned at the Naval Hospital; served a residency at the French Hospital in New York; entered the U. S. Navy Oct. 14, 1943; killed in action June 16, 1945, aged 29.

George Riley Hogshire Jr. * Surgeon, Lieutenant Commander, U. S. Navy, Portland, Ore.; born in Lebanon, Ind., Jan. 11, 1906; University of Oregon Medical School, Portland, 1931; entered the U. S. Navy in 1931, interning at the U. S. Naval Hospital in Mare Island, Calif.; on duty at Pearl Harbor as junior medical officer on the U. S. S. *Beaver*; transferred to Bremerton Naval Hospital; then was assigned to the Destroyer Division and to the U. S. S. *Smith*; outpatient physician at the Naval Dispensary, Long Beach, Calif.; in February 1941 went to the Philippines,

where at the outbreak of war he served on Corregidor with the 4th Regiment of the Marines; after the fall of Corregidor was a ward medical officer in Bilid Prison; awarded the Silver Star, Bronze Star Medal and the Gold Star in lieu of the Second Bronze Star Medal; died in the Asiatic area Oct. 24, 1944, aged 38, when the ship on which he was being transported to Japan was sunk.

Thomas Hirst Hayes * Medical Inspector, Commander, U. S. Navy, Alexandria, Va.; George Washington University School of Medicine, Washington, D. C., 1920; entered the U. S. Navy as a lieutenant (jg) in August 1924; promoted through the various ranks; taken prisoner by the Japanese at the fall of Corregidor and held in Bilid Prison; killed Jan. 9, 1945, aged 46, while on a Japanese Prison ship which was bombed in a harbor in Formosa.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 8, 1948.

The National Health Service Act Opposition of the British Medical Association

The negotiations between the negotiating committee of the medical profession and the Minister of Health with regard to the National Health Insurance Act have at last been published and reveal a serious disagreement. The British Medical Association has sent to every member of the profession a statement of their objections with the minister's reply. They point out that the medical profession itself has provided the main impetus toward the establishment of a comprehensive medical service. From time to time since 1920 it has evolved statements of policy and published constructive proposals. Such differences as have arisen with the government relate not to the objective but to the means of reaching it. In the public interest the profession is opposed to any form of service which leads directly or indirectly to the members of the medical profession becoming full time salaried servants of the state. The profession should remain free to exercise the art of medicine according to its traditions, the individual doctor retaining full responsibility for the care of the patient. The citizen should be free to choose or change his family doctor; to choose with his family doctor the hospital in which he should be treated and to decide whether to avail himself of the public service or to obtain medical service independently. Doctors should, like other workers, be free to choose the form, place and type of work that they prefer, without governmental direction.

The two features of the act which have aroused the greatest misgiving in the profession are the abolition of the custom of buying and selling practices and the establishment of a machine of "negative direction" over the movements of general practitioners. On the need for better distribution of doctors the Minister of Health based his arguments for the abolition of ownership of goodwill in practice. But problems of distribution can be met in a satisfactory way by dealing with cases of under-doctoring as they occur. No areas will remain underdoctored because of inability to purchase medical service, for, as a result of the act, there will be available medical payment in respect of every member of the community. Any remaining deficiency in particular localities can be remedied by adjusting the conditions of service to attract practitioners to the underdoctored area. The abolition of the established practice of buying and selling practices would create more difficulties than it solves. Practically every existing partnership is governed by an agreement which provides that on the retirement, death or sickness of one partner the other partner or partners shall have the option, and often the obligation, to purchase the share of the outgoing partner. The altered position produced by the act will give rise to insurmountable difficulties in carrying out the agreement. A doctor may be required to buy a partner's public practice, the capital value of which he cannot realize, the income from which he cannot receive, and compensation for which is not available to him. It is in the best interest of the public that general practitioners should retain the ownership of the goodwill of their practices. This provides an important incentive, encourages good work and provides a basis for cooperation between doctors.

The act makes possible a state monopoly of hospitals and may also be applied to institutions not generally regarded as hospitals, such as nursing homes. State ownership of these is not

essential to the efficiency of the medical service and would deprive the profession of facilities for independent practice which are necessary for the maintenance of a high standard of medical practice. The fear is aroused that a Minister of Health may establish a monopoly in hospitals by compulsorily acquiring any private hospital or clinic. On public grounds he should not be allowed to establish such a monopoly. He also is given power to allow any practitioner on the staff of a hospital to treat his private patients at that or any other hospital. The committee holds that the minister's discretion should be replaced by an obligation to permit specialists in the service to attend their patients in private hospital accommodations.

THE MINISTER'S REPLY

In reply the Minister of Health says that the scheme in no way interferes with the doctor's relationship to his patients, of which the very essence should be personal and confidential. The object of the act is simple: it is to help, by public funds, to insure that any one—the highest or the lowest—should be confident of getting all the best that the great profession can give. If the members of the profession rally to it, the greatest health service in the world can come into being. A scheme of this magnitude is bound to need amending as it is found wanting. But in its conception it is of incalculable value to the great mass of the population, and the medical profession will be the first to want—as they have wanted—something of the kind. For his part, the minister is concerned mainly to get this great national scheme launched and to plan wider and wider lines, with the physicians directly cooperating in the management. He asks them to help him in launching and in constantly improving it as it goes along.

THE ATTITUDE OF THE BRITISH MEDICAL ASSOCIATION

The Council of the British Medical Association has issued a statement that on no single major issue has the minister responded to the reasoned arguments of the profession. On January 31 a plebiscite of all members of the profession will be taken, and on the result the British Medical Association will determine its future action. Whatever the result, no doctor will be advised not to render service to his patients or not to continue with his professional work. If the profession decides against service, consultants and specialists will be advised to continue with their hospital work, meanwhile refraining from entering into contract with regional hospital boards; general practitioners will be advised to continue with their practices but without entering into contract with local executive councils; health officers will be advised to continue with their work under local authorities.

Parliament has given to every doctor the right freely to enter or not to enter the service. The medical profession, while never willing to withdraw its services from the public, is fully entitled to say that the state service offered is, in its considered view, opposed to the best interests of the public and the profession. In spite of the minister's promise that he would, if convinced, seek amendment of the act, he has remained unconvinced and impervious to argument. Thus, for nearly a year the association has worked at the conference table to no purpose. The council asks whether the service, as described by the minister, conflicts with the traditions and standards of a great profession. They reply that there is only one answer that they can give to this question. It does so conflict. Thus the stage seems set for a great struggle between the government and the medical profession, which, with the great increase of membership due to the apprehensions aroused by the scheme, the British Medical Association can claim to fully represent. Like all socialistic schemes, this one is quite laudable in its intention but the practical difficulties of carrying it out are ignored.

Red Cross Society to Establish Hospitals in India

The withdrawal of British rule from India has taken place without any manifestation of gratitude for the benefits conferred by the introduction of European civilization. India has also chosen not to remain within the British Commonwealth of nations, of which each enjoys complete autonomy. This has caused some disappointment in this country, but nothing but goodwill has been manifest for the new states. This is shown by the efforts of the British Red Cross Society to relieve the distress in India. A beginning is to be made by establishing a hospital of two hundred and fifty beds, with room for another one hundred and fifty, at Lahore. Besides this main hospital there will be three subsidiary hospitals, each with fifty beds, and two or three mobile dispensaries with a fleet of twenty-four ambulances attached to them. The establishment of the hospital and its subsidiaries is expected to use up all the \$400,000 allocated by the society for relief in India as well as the money raised by subscriptions. The first hospital is expected to be ready for use in March, and its specialist staff of twenty persons is being formed in England. It will be headed by Colonel W. Lawe, who has had twenty-four years in the Indian Medical Service, the last thirteen of which were spent exclusively in work for the Indian civil population. The remainder of the staff is being recruited in India and Pakistan.

Four main hospitals will be needed in Pakistan to provide even the foundations of an adequate relief scheme. To maintain them will cost \$800,000 a year. Because of the climate in the Lahore region tent hospitals would be most unsuitable, especially in the hot season. Materials will be divided between India and Pakistan, but only Pakistan has asked for a staff.

BOLIVIA

(From Our Regular Correspondent)

LA PAZ, Dec. 18, 1947.

Life Expectancy at High Altitudes

Are there any effects of continuous exposures to high altitudes on birth rates, mortality and life expectancy? The city of La Paz, with 300,000 inhabitants, is situated at 12,000 feet (3.66 kilometers) above sea level. There are also other regions in this country which are at average levels, around 1,000 feet (0.3 kilometer) above sea level.

A preliminary study based on figures for 1942 to 1944, has been released by the statistical office, which in turn has collected them through the regular channels of the registrars' offices all over the country. In this study, the country was divided into three sections, each consisting of three districts. The first section, zone 1, comprises those districts where most inhabitants live constantly at average altitudes exceeding 10,000 feet (3 kilometers); zone 2, those districts with an average altitude between 3,000 and 10,000 feet (0.9 and 3 kilometers), and, finally, zone 3, those districts which are situated at an average altitude of less than 3,000 feet (0.9 kilometer).

The population investigated was comprised of whites, 17.6 per cent; mestizos, 30.6 per cent; Indians, 51.5 per cent, and other races, 0.3 per cent.

The country actually has 3,786,500 inhabitants, distributed to the aforementioned districts and zones.

Over half the population (57 per cent) lives and works constantly on levels above 10,000 feet (3 kilometers), and a certain part even at altitudes as high as 15,000 feet (4.57 kilometers) above sea level.

As to the climate, zone 1 is moderately cool, with an average annual temperature of about 9 C. (48 F.); zone 2 has a sub-tropical climate and an annual average temperature of 17 C. (62.6 F.), and zone 3 is tropical, with an annual average temperature as high as 25 C. (77 F.). The inhabitants of each zone

can be considered as completely acclimated to their respective altitudes, as only relatively few of them ever move from one zone to another.

BIRTH AND DEATH RATES

Altitude seems to have relatively little influence on the birth rates. Surprisingly enough, birth rates are higher in zones 1 and 2, above 3,000 feet (0.9 kilometer). Natality rates were best in zone 2 and were followed by those of the highland (zone 1). Thus low atmospheric pressure seems to have no untoward effect on the birth rate, considering that practically all the inhabitants were acclimated. Conditions for unacclimated persons are somewhat less favorable.

The mortality rates were almost identical in the two zones (1 and 2) above 3,000 feet (0.9 kilometer), but they were comparatively higher than in the lowlands (15.7 per cent as against 9.3 per cent). This large difference between the zones is noteworthy, but no definite reason can be offered so far. Excessive differences with regard to individual cause of death in each zone, which eventually could account for that surprising observation, were not detected; only diseases of the respiratory tract were somewhat above the average figures in zone 1. The annual increase of population was highest in zone 3, the lowest section of the country.

INFANT MORTALITY

Infant mortality is a major problem all over South America, and thus the comparatively high figures are not surprising. The average death rate for children under 1 year of age for 1944 works out at 133.3 per thousand living children. The figure compares not unfavorably with that of some other countries of the Continent.

The effect of altitude on infant mortality is noteworthy. Although in the lowlands (zone 3) with its tropical climate and high incidence of malaria the annual mortality rate stayed at 93.3 per thousand, the corresponding figure for the highlands (zone 1) was 142.2 per thousand. Thus a baby born near sea level had 50 per cent more chance to survive his first year of life than did his companion at 10,000 feet (3 kilometers). The relative frequency of whooping cough and congenital weakness accounts for some of the additional deaths in zone 1, but does not explain completely the difference as against zone 3 (lowland); nor are there any better hospital and medical facilities in the lower sections of the country than in the higher ones.

Death Rates in Other Age Groups

Striking differences due to altitude became evident in the death rate of the age group from 1 to 5 years. While only one eighth of all the deaths belonged to that group in zone 3, in zone 1 more than one quarter of the deaths had been in that age group. Again no one specific disease could be blamed for this relative excess in zone 1, even though diseases of the respiratory tract were somewhat more frequent in that section.

Less striking were the differences in the age group from 5 to 14 years, but even there the child in the lower altitudes had a better chance of survival. Figures for the age groups from 25 to 64 show a lower death rate in zone 1; figures for the ages above 65 are fairly mixed for all the sections. The average ages at death were as follows: zone 1, about 31 years; zone 2, about 34 years, and zone 3, about 37 years.

Thus life expectancy in the lower sections was also found to be much better than in the highest zone.

CONCLUSIONS

1. Continuous exposure to excessive altitudes results in a sharp rise of infant and child mortality, and therefore in a reduced life expectancy even in acclimated persons.

2. This same continuous exposure seems to be without any untoward effects on the birth rates; on the contrary, those rates were even better in the higher sections.

Correspondence

ESTIMATION OF PROTHROMBIN TIME

To the Editor:—The opinion grows that the results of estimation of prothrombin time should be reported in terms of per cent or of per cent of normal. Recently, a plea has been made that the practice be made universal (Allen, E. V.: *THE JOURNAL*, page 323, May 24, 1947). The main reason for the suggestion has been stated by Barker, Hines, Kvale and Allen: "If clinicians become accustomed to discussing concentrations of prothrombin in terms of percentage rather than time, it is possible to compare the results of the tests performed in many institutions or by individual physicians in different institutions" (*Ann. J. Med.* 3:636 [Nov.] 1947). Percentage figures in most published reports are based on the construction of a curve of average prothrombin times of serial dilutions of normal plasmas plotted against the dilutions of these plasmas expressed in the percentage of whole plasma. Not infrequently, there is no statement as to how the percentage figure is obtained. Albeit, in using this concept several facts must be considered:

The conversion to percentage must be obtained from a curve derived from the activity of the particular thromboplastin used. Otherwise, it may be misleading. This is obvious from the degree of variation in prothrombin time-per cent curves obtained by different workers. (An excellent example of this occurs in the brochure published by a pharmaceutical house marketing "dicumarol," E. R. Squibb & Sons). Thus, Aggeler and others (*Blood* 1:220 [May] 1946) report whole plasma prothrombin time 11.5 seconds and 12.5 per cent plasma prothrombin time 55 seconds. Shapiro (*Exper. Med. & Surg.* 2:103 [May] 1944) reports prothrombin time of whole plasma 16 seconds and of 12.5 per cent plasma 40 seconds. To be accurate, each worker must construct his own curve on the basis of the clotting time characteristics of the thromboplastin he uses. He then determines the per cent solely by prothrombin time. When this is done, he can just as readily establish values, in time, for "dicumarol" therapeutic range or for normal limits.

The use of the term percentage prothrombin is misleading because it implies expression of the concentration of prothrombin. (See preceding statement by Barker and associates.) Actually, it is the clotting activity of an altered sample of plasma which is being estimated. Rapoport (*Proc. Soc. Exper. Biol. & Med.* 64:478 [April] 1947) has shown that when plasma with reduced prothrombin activity is diluted, its dilution curve is not superimposable on that portion of the normal prothrombin time-per cent curve which it should theoretically duplicate. Furthermore, Shapiro and others have called attention to the lack of uniformity in the relationship of whole and diluted plasma prothrombin time in certain pathologic states, i. e., a reduced difference between whole and diluted plasma prothrombin time in hyperprothrombinemia (*Proc. Soc. Exper. Biol. & Med.* 50:85, 1942; Shapiro and others, *J. Clin. Investigation* 22:137, 1943).

In view of these facts it seems clear that unpredictable errors may enter when the curve constructed from normal plasma is applied to a result obtained with pathologic plasma in which substances other than prothrombin may affect prothrombin time.

Given samples of plasma do not invariably yield the same per cent prothrombin activity when determined by different thromboplastins, even if the respective prothrombin time-per cent curves are used. These facts minimize the claim that reporting results in terms of per cent makes it possible for different workers using different thromboplastin preparations to quantitatively compare their results more easily than if results are reported in terms of time. By analogy one may ask, what service would it render to report blood cholesterol or sugar or red blood cells in per cent of normal? The unjustified assumption of accuracy which the percentage figure connotes is exemplified in the expression of basal metabolic rate in terms of per cent.

It seems to us that to follow adequately the prothrombin response to "dicumarol," the clinician should know the normal range of the thromboplastin used and the therapeutic range he wishes to establish in terms of time. With this knowledge the calculation of percentage is superfluous; without it the percentage figure is misleading. Of additional importance is the fact that use of figures as percentage of normal may rapidly acquire the connotation of a sense of accuracy which has not been proved. Estimation of prothrombin time is, at best, an indication of the in vitro clotting capacity of a specimen of plasma obtained and studied under certain standardized conditions.

In pathologic conditions, such as thrombotic or hemorrhagic states, certain interfering or accelerating substances can be demonstrated in the blood (Shapiro: *Proc. New York Path. Soc.* 1946-1947, to be published). These substances generally lose their activity in plasma diluted 1:8. Hence, by measuring the values of whole and diluted (12.5 per cent) plasma, the clinician may gather information which may be of more clinical significance than either single estimation. Such phenomena escape detection when percentage figures are quoted.

The application of estimation of prothrombin time in clinical medicine is not confined to following responses to "dicumarol." Diluted (12.5 per cent) plasma prothrombin time and response to vitamin K can be used as a liver function test. It has many uses in detecting and categorizing certain dyscrasias of the blood. The method demands the use of a standardized thromboplastin. If a thromboplastin preparation with an optimum range of activity should be adopted as the universal standard, there would be no difficulty in comparing results obtained in the various laboratories. With such a system, the results could be given in time, and it would eliminate the need for additional means of calculation, including percentage values.

SHEPARD SHAPIRO, M.D.

MURRAY WEINER, M.D.

New York.

FELLOWSHIP IN STUDY OF ATOMIC ENERGY

To the Editor:—For some time the Atomic Energy Commission has been concerned with the shortage of trained personnel in the fields of medicine and biology as they apply to atomic energy. Because of the importance of a broad program for the study of these fields, the Atomic Energy Commission announces a fellowship training program, which includes a number of fellowships for doctors of medicine. These doctors of medicine will receive two years of intensive training in atomic energy as it applies to medicine.

The program will be administered by the National Research Council, and further detailed announcements will be forthcoming in the near future with the hope that a group of fellows may begin training by Sept. 1, 1948. There will be an adequate stipend with consideration of the marital status of the fellows. Training will include formal instruction in such essential subjects as chemistry, biology, physics and mathematics, with particular emphasis on their application to the medical aspects of atomic energy. It is planned that after a year of such fundamental training, the fellows would enter into fundamental and clinical research programs which are in progress at the various regional laboratories of the commission. At the termination of their training, fellows will be free to follow careers of their own choice. However, there will be opportunities for suitable candidates in the various medical facilities of the commission, and with the amplification of medical school departments in this field there will be opportunities in such institutions. It is hoped that such a fellowship program will produce a group of well trained physicians in this new and vital field.

SHIELDS WARREN, Washington, D. C.

Interim Director, Division of Biology and Medicine.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Validity of Law Permitting Detention of Prostitutes for Venereal Examination.—The petitioner filed an original action in habeas corpus to secure her release from confinement in the city jail of Oklahoma City. The case was heard in the criminal court of appeals of Oklahoma.

The petitioner was arrested in an apartment house on the evening of May 11 and placed in the city jail with the booking "vagrancy by prostitution, investigation, and hold for clinic." The next afternoon she pleaded guilty to the charge of vagrancy before the police judge, who directed that she be taken to the venereal disease clinic for examination. There a specimen for a slide examination was immediately taken to determine whether she had gonorrhea. At the same time, a specimen for a culture was taken and sent to the state laboratory for examination. The proof showed that the examination of the slide would disclose within just a few hours whether the patient was infected but that it took forty-eight hours to get the result of the culture test. The examination of the slide was negative, but at the time of the hearing the laboratory had not completed its test on the culture.

The law under which the respondent justified his restraint of the petitioner provided: "The keeper, manager, guard or person in control of every prison or penal institution in this state shall cause to be examined every person confined in such prison or penal institution after conviction for any offense, to determine whether such person is an infected person. State and local Health Officers, or their authorized deputies who are physicians, are empowered to examine those who are arrested by lawful warrant for vagrancy, prostitution, rape or other sex crimes for the purpose of determining if they are infected with venereal disease. Every such person shall submit to such examination and permit specimens to be taken for laboratory examinations. Such person may be detained until the results of such examination are known. The required examination shall be made by the Health Officer, or, at the option of the person to be examined, by an approved licensed physician. All persons found to be infected with a venereal disease shall be treated by the local Health Officer or a licensed physician of their own choice until said person is noninfectious or dismissed by said physician. In the event such person infected with a venereal disease refuses or fails to submit to treatment, then said person may be quarantined for the purpose of treatment and reported to the State Board of Health."

The petitioner contended that the foregoing statute is unconstitutional for the reason that it amounts to forcing a person to give testimony against one's self and constitutes an illegal delegation of legislative authority. She further contended that the rules, procedure and acts on the part of the police department in the manner in which they effected her arrest and detention were illegal and unconstitutional throughout. In a prior case construing the venereal disease act of 1919, the criminal court of appeals said: "The power of the Legislature to prevent the introduction and spread of infectious and contagious diseases cannot be questioned, and the power to make quarantine regulations is one of the most important conferred upon the health authorities, and such regulations constitute a proper exercise of police power."

The petitioner contended that a police officer may not arbitrarily arrest a person on suspicion of a communicable venereal disease but that such fact must be judicially determined before the infected person may be restrained of her liberty or detained for examination and treatment. The court pointed out that the only person in Oklahoma City who commits a suspected infected person to the clinic for examination is the police judge, and he does so only when the proof before him shows that the suspected person is one of the class named in the statute. Here, the peti-

tioner was a known prostitute who admitted that she had at one time been infected with a venereal disease. Certainly, if the statute is constitutional, there were sufficient grounds for the police judge to believe that the petitioner should be detained at the clinic until her venereal tests were completed. Counsel for the petitioner contended that the policemen are making it so tough for the petitioner through numerous arrests, and holding her for examination at the clinic, that it results in the petitioner spending a large part of her time in illegal restraint. The petitioner plead guilty to vagrancy by prostitution committed on the night of May 11. If she continues to follow the illegal profession of prostitution, one of the hazards that she must contemplate is that the police might arrest and prosecute her for such conduct and as a necessary corollary to such arrest detain her in the quarantine ward for examination in order to protect that part of the public who might seek the services of the petitioner in her profession from becoming infected with a communicable venereal disease.

The adoption of laws for the protection of public health is universally considered to be a valid exercise of the police power of the state as to which the legislature is necessarily vested with large discretion, not only in determining what are contagious and infectious diseases but also in adopting means for preventing the spread thereof. The act in question specifically names the conditions under which a suspected person may be detained for examination. If a person is lawfully arrested for one of the crimes mentioned in the statute and the officers mentioned are of the opinion that an examination should be given to determine whether that person is infected with a venereal disease, the suspected person is entitled as a matter of right to have the test given as speedily as is possible so that her quarantine will not be longer than is absolutely necessary to determine whether there is an infectious disease. One of the most important rights guaranteed under our constitution is liberty of the citizen. This cannot be lightly passed over. We will not allow an encroachment on that right except in an emergency occasioned by danger to the public health and then only in strict compliance with the statutes.

It is our conclusion, said the court, that the statute in question does not make an illegal delegation of legislative authority. If the petitioner is right in her contention that the policemen acted maliciously and detained her an unnecessary length of time under the pretense of giving her venereal tests, her recourse is in the civil courts. We wish, however, to emphasize that officers who are sworn to enforce the law, in following the statute which has been given them for the purpose of combating the spread of venereal disease, should not use such authority as a cloak to give unwarranted and additional punishment to persons on the ground that they are suspected of infection with a venereal disease. Accordingly the petitioner's request for the writ of habeas corpus was denied.—*Ex parte Fowler*, 184 P. (2d) 814 (Okla., 1947).

Workmen's Compensation Acts: Inhalation of Dust as Cause of Heart Ailment.—The petitioner filed a claim for a compensation award, which was granted by the referee. The referee's award was reversed by the commission but later affirmed by the circuit court. Accordingly the employer appealed to the Supreme Court of Arkansas.

The petitioner had worked for the Batesville White Lime Company for twenty-three years, and much of the time his duties kept him around a rock crusher where the air was heavily impregnated with dust. After the petitioner's claim was filed, the matter was referred to a medical board in conformity with the Arkansas workmen's compensation law, which reported that it found no evidence of petitioner's being afflicted with silicosis or tuberculosis but found "that the inhalation of dust in the employment has aggravated a preexisting heart condition, which in our opinion renders the claimant totally and permanently disabled from following any occupation." On the basis of this report, the referee granted an award. The employer and the commission took the position that, since this inhalation of dust continued over a period of years, so that the damage to the petitioner's heart by the additional strain imposed on it was

probably gradual, there was no trauma which would admit of a finding of accidental injury within the meaning of the term as used in the workmen's compensation law.

The Supreme Court first pointed out that the terms of the workmen's compensation act must be given a liberal interpretation in favor of the claimant and, further, that the Arkansas act provides that "there shall be a prima facie presumption . . . that the claim comes within the provisions of this Act." Continuing, the court said that the word "accidental" has often been construed to mean "unexpected," "fortuitous" or "not to be reasonably anticipated." Now there is nothing in the proof in this case, said the court, to justify a conclusion that the injury to the petitioner's heart by breathing the excessive amount of dust was one which the petitioner might have reasonably expected or anticipated. Certainly it was accidental as far as he was concerned; and there is much authority for a holding that an injury which is not necessarily the result of one impact alone but is caused by a continuation of irritation on some part of the body by foreign substances may properly be said to be accidental. After citing numerous cases bearing on the issue, the Supreme Court concluded that even though the evidence did not show the exact instant at which the disability of the petitioner could be said to have occurred by reason of breathing the dust, nevertheless, as shown by the proof, the inhalation of the dust did aggravate the petitioner's cardiac ailment to the point of totally disabling him. The judgment of the circuit court affirming the referee's award was therefore affirmed.—*Batesville White Lime Co. v. Bell*, 205 S. W. (2d) 31 (Ark., 1947).

Medical Motion Pictures

NEW MOTION PICTURES ADDED TO A. M. A. FILM LIBRARY

Clinical Malaria. 16 mm., black and white, sound, 1,000 feet (one reel), showing time twenty-eight minutes. Produced in 1944 for the Bureau of Medicine and Surgery, U. S. Navy, by Audio Productions, Inc., New York. Procurable on loan from the American Medical Association, Committee on Medical Motion Pictures, 535 North Dearborn Street, Chicago 10.

"Clinical malaria" is a basic teaching film. By a combination of actual photography and animation, the relationship of the life cycle of the malarial parasite in the blood stream to the patient's clinical symptoms is clearly shown. The symptoms, signs and pathologic bodily changes associated with the three common types of infection (benign tertian, quartan and malignant tertian) are depicted.

This film is recommended for the general practitioner and medical student.

Moles and Melanoma. 16 mm., color, sound, 350 feet, showing time eight minutes. Prepared in 1945 for the Bureau of Medicine and Surgery, U. S. Navy, by Pathoscope, New York. Procurable on loan from the American Medical Association, Committee on Medical Motion Pictures, 535 North Dearborn Street, Chicago 10.

By animation the structure and skin cells of benign and cancerous moles are illustrated. The film shows the ineffective results with improper removal of a mole and the proper procedures that insure good results.

It is recommended that this picture be shown to general practitioners and medical students.

Plague Control. 16 mm., color, sound, 800 feet (one reel), showing time twenty minutes. Produced in 1945 for the Bureau of Medicine and Surgery, U. S. Navy, by Pathoscope, New York. Procurable on loan from the American Medical Association, Committee on Medical Motion Pictures, 535 North Dearborn Street, Chicago 10.

This film introduces the problems created by plague; it identifies types, carriers and characteristics of the disease, control and preventive measures. It stresses the importance of effective programs for rodent and flea control.

This picture is recommended for the general practitioner, medical student and public health worker.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in THE JOURNAL, Jan. 31, page 349.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Examination, Montgomery, June 22-24, 1948. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery 4.

ALASKA: * Juneau, March 2. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARKANSAS: * Examination, Little Rock, June 3-4. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Electric*: Little Rock, June 3. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral*. San Francisco, June 5-6; Los Angeles, Feb. 28-29. *Written Examination*, Los Angeles, March 1-4. *Oral and Clinical Examination for Foreign Graduates*, Los Angeles, Feb. 29; San Francisco, June 6. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

COLORADO: * Examination, Denver, June 21-23. Final date for filing application is June 5. *Endorsement*, Denver, April 6. Final date for filing application is March 20. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver.

CONNECTICUT: * Examination, March 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic Examination*, Derby, March 9-10. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

DISTRICT OF COLUMBIA: * *Reciprocity*, Washington, D. C., March 8. Sec., Commission on Licensure, Dr. G. C. Ruhland, 4130 E Municipal Bldg., Washington.

FLORIDA: Examination, Jacksonville, June 29-30. Sec., Dr. Harold D. Van Schaick, 6675 Windsor Lane, La Gorce Island, Miami Beach 41.

INDIANA: Examination, Indianapolis, June 1948. Sec., Board of Medical Registration and Examination, Dr. Paul R. Tindall, K of P Bldg., Indianapolis.

IOWA: Examination, Iowa City, March 15-17. Comm., Dr. Walter L. Bierring, Dept. of Health, Des Moines.

KANSAS: Kansas City, June 9-10. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Examination, Louisville, June 16-18. Sec., Dr. P. E. Blackerby, 620 S. 3d St., Louisville.

MAINE: Portland, March 9-10. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.

MARYLAND: Medical Examination, Baltimore, June 15-18. Sec., Treas., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homeopathic Examination*, Baltimore, June 15-16. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Examination, Boston, March 9-12. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413 E State House, Boston. *Mississippi*: Jackson, June 1948. Asst. Sec., State Board of Health, Dr. R. M. Whitfield, Jackson.

MONTANA: Helena, April 5-7. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEBRASKA: * Examination, Omaha, April 12-14. Dir., Mr. Oscar F. Humble, Room 1009 State Capitol Bldg., Lincoln 9.

NEVADA: Carson City, May 3. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Examination, Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: Examination, Trenton, June 15-17. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW YORK: Examination, Albany, Buffalo, New York, Syracuse, Feb. 16-19. Sec., Dr. J. L. Lochner, Jr., Education Bldg., Albany.

NORTH CAROLINA: *Endorsement*, Pinehurst, May 4. Sec., Dr. Ivan Procter, 226 Hillsboro St., Raleigh.

OHIO: *Endorsement*, Columbus, April 6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

RHODE ISLAND: * Examination, Providence, April 1-2. Chief, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Written Examination*, Columbia, June 21-23. *Endorsement*, March 1. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

TEXAS: Austin, Feb. 19-21. Asst. Sec., Mrs. Laura McElroy, 918-20 Texas Bank Bldg., Dallas 2.

UTAH: Examination, Salt Lake City, June, 1948. Asst. Dir., Department of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VIRGINIA: Examination, Richmond, June 18-19. *Endorsement*, Richmond, June 17. Sec., Dr. K. D. Graves, 306 Medical Arts Bldg., Roanoke.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau, Feb. 23-29. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: Examination, Tucson, March 16. Sec., Mr. Francis A. Roy, Science Hall, Univ. of Arizona, Tucson.

ARKANSAS: Little Rock, May 4. Sec., Mr. L. E. Gebauer, 1002 Dragey Bldg., Little Rock.

COLORADO: Examination, Denver, March 3-4. Final date for filing application is Feb. 18. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

DISTRICT OF COLUMBIA: Examination, Washington, April 19-20. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington.

FLORIDA: Examination, June 5. Final date for filing application is May 23. Sec., Mr. M. W. Emmel, Univ. of Florida, Gainesville.

IOWA: Des Moines, April 13, July 13, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MINNESOTA: Examination, Minneapolis, April 6-7. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

OKLAHOMA: Oklahoma City, March 1. Sec., Dr. Frank Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: Examination, Portland, March 6. Sec., Basic Science Examining Committee, Mr. C. D. Byrne, Univ. of Oregon, Eugene.

TENNESSEE: Memphis, March 15-16. Sec., Dr. O. W. Hyman, Univ. of Tennessee, 874 Union Ave., Memphis.

WISCONSIN: Examination, Madison, April 3. Sec., Dr. W. H. Barber, Scott & Watson Sts., Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted

American Journal of Clinical Pathology, Baltimore

17:761-846 (Oct.) 1947. Partial Index

- Utilization of Vitamin B₆ Conjugate in Pernicious Anemia. E. A. Sharp and E. C. Vonder Heide.—p. 761.
- Effect of Lipids on Kahn Antigen: III. Increasing Sensitivity of Kahn Standard Antigen to Level of Kahn Sensitized Antigen by Addition of Alcoholic Extract of Soy Bean Lecithin. A. H. Wheeler and Ella M. Brandon.—p. 770.
- *Recovery of Group O Recipient After Transfusion of 2 Liters of Group A Blood: Report of Case with Autopsy Following Ultimate Death from Carcinoma of Lung and Pyothorax. L. E. Young, R. F. Platzer, C. I. Yuile and R. L. Woodruff.—p. 777.
- Diffuse Primary Alveolar Carcinoma of Lung: (So-Called "Alveolar Cell" Tumor of Lung). M. A. Simon.—p. 783.
- Endemic (Murine) Typhus: Report of Autopsy Findings in 3 Cases. C. H. Binford and H. D. Ecker.—p. 797.
- Occurrence of a Common Group Antigen Among *Candida Albicans*, *Saccharomyces Cerevisiae* and *Hansenula Anomala*. A. J. Rawson and R. F. Norris.—p. 807.
- Characteristic Urinary Findings in Visceral Angiitis (Periarthritis Nodosa, Lupus Erythematosus). J. B. Male.—p. 820.

Recovery After Receiving Incompatible Blood.—

According to Young and his associates the reported mortality from transfusion of blood incompatible with respect to the major blood groups is approximately 50 per cent and is roughly proportional to the quantity of blood given. Death occurred within twenty-four hours in most cases when more than 500 cc. of incompatible blood was transfused. In the case reported in this paper, 2,000 cc. of group A blood was transfused into a group O patient as a result of improper identification of the recipient when blood was drawn for cross matching. The patient apparently recovered completely from the hemolytic reaction but died fifty-three days later of carcinoma of the lung and pyothorax. Necropsy failed to reveal more than minimal evidence of renal damage or other abnormalities which could reasonably be attributed to the transfusion. This case suggests among other factors that the recipient's chances of survival may depend not only on the quantity of blood transfused but also on such factors as urinary β_n , isoagglutinin titer, presence of cancer and infection and state of anesthesia. Hemolytic reactions occurring in patients under general anesthesia may not be detected unless close attention is paid to the development of jaundice, oliguria and hemoglobinuria. When blood grouping and blood matching are repeated after a suspected hemolytic reaction, it is essential that examination be made of the patient's blood taken after transfusion as well as of the patient's blood taken before transfusion.

American J. Digestive Disease, Fort Wayne, Ind.

14:315-340 (Oct.) 1947

- Metabolism of Sucrose: II. I. M. Rabinowitch.—p. 315.
- System of Diabetic Diet Prescription for General Practitioner. C. P. Lamar.—p. 323.
- *Etiology of Protruded Gastric Mucosa: with an Illustrative Case Report. S. P. Bralow and M. A. Spellberg.—p. 332.

Etiology of Protruded Gastric Mucosa.—Bralow and Spellberg report on a man, aged 57, who had been hospitalized for duodenal and prepyloric ulcer on seven occasions. The sequence of benign peptic ulceration followed by gastritis which, on healing, produces hypertrophic gastric rugae and later a prolapse of gastric mucosa into the duodenal bulb appeared as the possible etiologic mechanism in this case. This mechanism probably plays a more general role in the causation of prolapse. An attempt is made to explain the results of two other observers who have recently reported on prolapse of the

gastric mucosa on the same basis. The authors believe that surgical treatment should be restricted to patients with intractable pyloric obstruction. Two more patients exhibiting the possible sequence of ulcer-gastritis-prolapse were admitted to the Veterans Administration Hospital, Hines, Ill.

American Review of Tuberculosis, New York

56:267-372 (Oct.) 1947

- *Late Primary Infection and BCG Vaccination. II. Malmros.—p. 267.
- Bronchial Lavage for Bronchiectasis: Preliminary Report of Simplified Technique. I. P. Stevenson.—p. 279.
- *Bronchial Asthma in Pulmonary Tuberculosis. A. A. Cohen.—p. 287.
- Production of Pleural Adhesions for Therapeutic Purposes. J. D. Steele.—p. 299.
- Hemorrhage from Intercoastal Vessel: Case Occurring During Thoracoscopy. C. G. Hayliss.—p. 303.
- Cholesterol Pleural Effusion: Report of Case. H. F. Stein.—p. 305.
- Mediastinal Emphysema Following Thoracoscopy: Case Report. I. G. Karron.—p. 308.
- Home Supervision of the Tuberculous. P. K. Telford.—p. 311.
- New Tuberculostatic Antibiotic from Species of *Nocardia*: Preliminary Report. E. W. Emmart.—p. 316.
- Media for Tubercle Bacilli. R. J. Dubos and G. Middlebrook.—p. 334.
- *Streptomycin in Experimental Tuberculosis: Effects in Guinea Pigs Following Infection by Intravenous Inoculation. W. H. Feldman, A. G. Karlson and H. C. Hinshaw.—p. 346.
- Derivatives of Diaminodiphenylsulfone and Heterocyclic Sulfones in Experimental Tuberculosis. B. L. Freedlander and F. A. French.—p. 360.
- Twelfth Pan American Sanitary Conference: Caracas, Jan. 12 to 24, 1947. E. R. Long.—p. 365.
- Primary Infection and Progressive Tuberculosis. M. Pinner.—p. 368.

Late Primary Infection and BCG Vaccination.—According to Malmros, late primary infection is a common cause of progressive pulmonary tuberculosis in young persons and adults. The frequently employed terms reinfection and reinfection type are misleading and should be abandoned. This concept determines to a high degree the preventive tuberculosis campaign in the Scandinavian countries. Since experiences suggest that nonreactors are especially exposed to the risk of contracting tuberculosis if they become infected, in Sweden all medical students and pupil nurses are now tuberculin tested before beginning hospital service, and the nonreactors are vaccinated. Conscripts in the services are vaccinated at the beginning of their term of service, and so are the majority of school children in the last class of primary school before their final examinations. Still more extensive vaccinations have been performed in certain districts. During the years 1942 to 1946, the whole population of 230,000 in the Örebro district was tuberculin tested, and about 18,000 nonreactors have been vaccinated with BCG under the author's supervision. No complications of any serious nature occurred. Over one fourth of the vaccinated persons consisted of newborn babies; 6,100 had attained the age of 15 years at the time of vaccination. During this period only 3 cases of suspected tuberculosis were reported among the 18,000 who were vaccinated. Under no circumstances should students of nursing and medicine be allowed to perform duties at hospitals if they are tuberculin negative. Only such hospitals as exert scrupulous tuberculosis control, including BCG vaccination of all nonreactors to tuberculin at least six weeks prior to the beginning of their service, should be accepted as training hospitals. A modern tuberculosis control program should include miniature photofluorography of all adults and children over 14 years of age, tuberculin testing of the whole population and vaccination of all nonreactors with BCG. It should be checked by follow-up examinations to see that the vaccinated persons remain tuberculin positive. Should the tuberculin reaction again become negative, revaccination is indicated.

Asthma in Pulmonary Tuberculosis.—Cohen states that the disease of 55 of 7,301 patients discharged from Olive View Sanatorium in the period from July 1, 1936 to July 1, 1946 was diagnosed as pulmonary tuberculosis and bronchial asthma, an incidence of 0.75 per cent. Of these, 36 seem to have an adequate basis for the diagnosis of asthma, an incidence of 0.5 per cent. He reports 9 additional cases of asthma and tuberculosis in 3 men between the ages of 27 and 40, 1 in a boy aged 5 and 5 in women between the ages of 24 and 41 who are under current observation. In this series of tuberculous patients asthma occurred less frequently than in the general population. In 34 discharged and 4 current patients asthma preceded tuberculosis, and in 2 discharged and 4 current patients tuberculosis

preceded asthma. There is no evidence in this group that tuberculosis predisposes to asthma or that asthma predisposes to tuberculosis. The claim that asthma is associated with the fibroid type of tuberculosis could not be substantiated. In 34 of the discharged patients and in the 9 current patients asthma had no unquestionably deleterious effect on tuberculosis. Correlation could not be made between the severity of asthma and the precedence of tuberculosis. Severe asthma tended to be associated with serious tuberculous endobronchial complications. There was no recognized instance of asthma of the tuberculo-allergic type, such as Urbach and Loew report.

Streptomycin in Experimental Tuberculosis.—Feldman and his co-workers inoculated 24 male guinea pigs by way of a superficial vein of the penis with 1 mg. moist weight of tubercle bacilli. The animals were divided into three groups as follows: 6 animals treated with streptomycin beginning at once and continuing for sixty days; 6 animals treated with streptomycin beginning on the fourth day after infection and continuing for 215 consecutive days; 12 animals were untreated controls. The daily amount of streptomycin administered per animal was 6 mg. given in four equal doses six hours apart. All untreated controls died within twenty-seven days. The duration of life of the animals in the two groups that received streptomycin was definitely extended. All treated animals eventually died, the last three hundred and forty-one days after the inoculation. Many had extensive tuberculous lesions. Morphologically there was impressive evidence that the residual lesions were in many instances no longer progressive but quiescent, healed or healing. The results demonstrated the ability of streptomycin to prolong the life of animals infected with a potentially rapidly lethal dose of tubercle bacilli. The tendency of the lesions to undergo fibrosis and the many instances in which signs of activity were missing in the organs of predilection indicate definitely that, anatomically, tuberculosis in guinea pigs may be profoundly altered in a favorable manner by streptomycin. An additional group of 29 male guinea pigs was infected with 0.5 mg. moist weight of tubercle bacilli. Treatment of 14 animals with streptomycin was started when the first infected animal died. Death of this animal occurred on the eleventh day after infection. The results of treatment in this experiment were definitely inferior to those observed when treatment was started earlier.

Annals of Allergy, Minneapolis

5:397-502 (Sept.-Oct.) 1947

- Nethaphyl in Treatment of Nasal Allergy and Bronchial Asthma. F. K. Hansel.—p. 397.
Skin Test Blocking Antibody Response to Oral Pollen Therapy and Criteria for Its Use. E. A. Brown, E. M. Holden and C. Nobili.—p. 402.
Oral Pollen Therapy: Comparative Study. R. O. Egeberg and J. M. Painter.—p. 415.
Benadryl: Clinical Evaluation Based on 171 Case Studies. S. D. Lockey.—p. 420.
Kaposi's Varicelliform Eruption: Relation to Atopic Dermatitis. L. Unger.—p. 426.
Mold Fungi in Etiology of Respiratory Allergic Diseases. H. E. Prince, E. G. Tatge and Marie B. Morrow.—p. 434.
Incidence of Idiopathic Cigarette Sensitivity. A. F. Coca.—p. 458.
*Use of Sex Hormones in Allergic Disorders. M. M. Hartman.—p. 467.
Light Urticaria. E. E. Ehrlich.—p. 478.
Spontaneous Fracture of First Rib as Complication of Status Asthmaticus. M. Ginsburg.—p. 488.
Allergic Dermatitis from Vaginal Absorption of Sensitizers (Floraquin and Verazepol): Report of Cases. B. Swinny.—p. 490.

Sex Hormones in Allergic Disorders.—Hartman calls attention to the fact that allergic phenomena frequently cease or begin at puberty or the climacteric and that in the menacme they may be heightened during the menstrual or premenstrual period. At these times the usually satisfactory allergy regimens of elimination and desensitization may be relatively ineffective. The author lists the ways in which endocrine dysfunction may bring about clinical manifestations of allergy and analyzes the aberrations in pituitary-ovarian function in some allergic patients. Important factors determining the type of hormone therapy are: the time of appearance of clinical manifestations; the gonadotropic and steroid hormone inventory at that time; the presence of endogenous hormone sensitivity. In general, allergies appearing at puberty should receive the usual allergy regimen plus psychotherapy for the disturbed emotional state until some consistent hormonal pattern is established. Meno-

pausal onset or exacerbation is due to uninhibited pituitary overactivity, which may be inhibited by estrogen but also by androgen if bleeding is present. Satisfactory results were obtained in 84 per cent of patients in this group. Menstrual phenomena are usually due to transient estrogen deficiency, which can be prevented in 83 per cent of patients by a single large, properly timed injection of estrogen just before the expected period. Premenstrual exacerbations or appearances are usually associated with premenstrual tension, the fundamental difficulty being temporary excess of estrogen. This can be combated by oral methyltestosterone therapy during the postovulatory and premenstrual phase or by desensitization to estradiol.

Archives of Dermatology and Syphilology, Chicago.

56:407-558 (Oct.) 1947

- Myxomatous Degeneration Cysts of Skin and Subcutaneous Tissues. A. R. Woodburne.—p. 407.
Action of Soap on Skin: IV. Action of Soap Containing Little or No Lauric or Oleic Acid. C. G. Lane and I. H. Blank.—p. 419.
*Porokeratosis: Review and Report of Cases. Phyllis E. Jones and D. C. Smith.—p. 425.
Lichen Planus in Negro. L. H. Winer and H. Levitt.—p. 437.
Long Hair, Chief of the Crows. E. F. Corson.—p. 443.
Acidity of the Scalp: Nature and Possible Relation to Seborrhea. O. Bergcim and T. Cornbleet.—p. 448.
Persistent Localized Bullous Eruption Associated with Focal Infection. S. Epstein.—p. 452.
*Treatment of Plantar Warts. H. Blank.—p. 459.
Chemistry of Palmar Sweat: II. Chloride. W. C. Lobitz Jr. and A. E. Osterberg.—p. 462.
Studies on Sensitivity to Formaldehyde Treated Starch. Helen R. Gottschalk.—p. 468.
Effects of Roentgen Ray Irradiation on Testes of Rabbits: Possible Harmful Effects on Human Testes from Low Voltage Roentgen Ray Therapy. J. L. Callaway, V. Moseley and S. W. Barefoot.—p. 471.
Mycosis Fungoides: Benign and Malignant Reticulum Cell Dysplasia. L. H. Winer.—p. 480.
*Lipstick Cheilitis: Common Dermatitis: Report of 32 Cases. S. J. Zakon, A. L. Goldberg and J. B. Kahn.—p. 499.
Ulcerating Hemangioblastoma: Report of Case. J. N. Holtzman and D. M. Grayzel.—p. 506.
Cutaneous Eruptions from Streptomycin. K. Steiner and G. W. Fishburn.—p. 511.
Development of Squamous Cell Epithelioma in Epidermolysis Bullosa: Report of Case. L. K. Halpern.—p. 517.
Disseminated Ulcerating Sporotrichosis with Widespread Visceral Involvement: Report of Case. W. T. Collins.—p. 523.
Blastomycosis, North American Type: Proved Case from European Continent. M. Brody.—p. 529.

Porokeratosis.—Jones and Smith report 2 cases of porokeratosis, an unusual and progressive cutaneous disease, in 1 youth aged 18 with congenital syphilis and in a boy aged 16 with acne of the face and back. Porokeratosis persists throughout life and is characterized by circinate or oval plaques composed of a hyperkeratotic linear border which progresses peripherally. There is a slender furrow running along the center of the peripheral wall, from which arises a keratotic ridge. Porokeratosis may be considered as of unknown origin, but a definite hereditary factor has been demonstrated repeatedly by reports of several cases of the disease occurring in one family. A possible relationship between porokeratosis and vitamin A deficiency is suggested. In both patients the onset of the disease occurred about the age of 12 years with slow progression of the lesions, which were clinically typical of the disease. It affects men three times as frequently as women. Porokeratosis should be classed with incurable dermatoses, because treatment has been unsatisfactory in the majority of the cases. Total excision of the lesion is the most reliable means of eliminating the disease, but this is suitable only in the early stages when lesions are small and few. Treatment was not attempted in the authors' cases.

Plantar Warts.—Blank treated 100 patients with plantar warts by exposing the verruca with a ring pad and salicylic acid ointment and destroying it with phenol and nitric acid used successively. Although indiscriminate chemical cauterization of these lesions is not without danger, no untoward reaction occurred in this series of cases. The number of applications varied from two to twelve, the average being six. Of the 88 patients on whom follow-up examinations were possible, all but 1 were free of clinical evidence of a verruca when the course of treatment was completed. The 1 patient who was a failure had had repeated inadequate surgical excision and electro-

desiccation over a four year period, with resulting scarring and distortion of the tissues. Of the 87 patients in whom the warts were obliterated by one course of treatment, 8 had a recurrence. Only 5 of the 8 submitted to repeated treatment, and in all of them a permanent cure was obtained.

Lipstick Cheilitis.—Zakon and his co-workers report 32 cases of cheilitis in women between the ages of 17 and 54 who were seen in one year of practice. Characteristic swelling and edema of both lips appeared after the patients had changed to a new type of lipstick, or the eruption appeared suddenly with continued use of the same brand over a period of months or years. The precipitating factor is the idiosyncrasy to and/or direct chemical irritation from the indelible dyes (bromofluoresceins). The diagnosis was made clinically, and treatment consisted of elimination of bromofluorescein dyes. A lipstick was substituted which did not contain dibromofluorescein, tribromofluorescein or tetrabromofluorescein. The patients' symptoms disappeared in an average period of two weeks. Photosensitization is to be considered as negligible. The use of a lipstick with a nonindelible dye is a practical, safe and rapid treatment and offers the solution of this frequent cosmetic problem.

Arkansas Medical Society Journal, Fort Smith

44:111-134 (Oct.) 1947

Diagnosis and Treatment of Disorders of Lung Requiring Surgical Resection. J. K. Donaldson.—p. 111.
Practical Considerations in Diagnosis and Treatment of Neurosyphilis. R. W. Grover, E. P. Cope and G. S. Rozals.—p. 120.
Organic Causes of Vomiting During First Six Months of Life. F. E. Shearer.—p. 122.

44:135-152 (Nov.) 1947

Psychologic Moment in Treatment of Tuberculosis. J. D. Riley.—p. 135.*
Condyloma Acuminatum: Podophyllin in Compound Tincture of Benzoin and Improvements in Technic of Treatment. M. M. Marks.—p. 137.
Leukemia Treated with Urethane. J. P. McAlister.—p. 139.

California Medicine, San Francisco

67:275-356 (Nov.) 1947

What's New in Gastro-Enterology. A. M. Snell.—p. 275.
What's New in Peripheral Vascular Disease. N. E. Freeman.—p. 280.
What's New in Tropical Medicine. A. C. Reed.—p. 282.
What's New in Cardiovascular Disease. W. P. Thompson.—p. 285.
What's New in Syphilis. C. W. Barnett.—p. 287.
What's New in Endocrinology. P. Starr.—p. 289.
What's New in Allergy. G. Piness.—p. 291.
Recent Advances in Pulmonary Diseases. R. H. Smart.—p. 293.
What's New in Infectious Diseases. H. A. Reimann.—p. 296.
Early Personalities and Hygiene at University of California. R. A. Bolt.—p. 297.
Plastic Surgery of Nares. G. V. Webster.—p. 302.
Periarteritis Nodosa (Panarteritis Nodosa) with Report of 4 Proven Cases. R. Paull.—p. 309.
Rheumatoid Arthritis: Review of Recent Literature. E. W. Boland.—p. 315.
California Cancer Commission Studies: Childhood Cancer. J. M. Kenney.—p. 325.

Canadian Medical Association Journal, Montreal

57:419-518 (Nov.) 1947

Urologist and General Practitioner. W. P. Hogarth.—p. 419.
Common Causes of Indigestion and Abdominal Pain in Patients with Negative Findings. W. C. Alvarez.—p. 425.
Immigration Tuberculosis. J. D. Adamson and J. N. Edmison.—p. 432.
Blood Loss in Labor. G. M. White.—p. 434.
Recent Advances in Dermatology. H. Orr.—p. 436.
Diabetic Maternity Patient and Her Baby. W. P. Tew.—p. 441.
Xanthomatosis. P. A. O'Leary and H. Montgomery.—p. 445.
Giant Bullous Emphysema. J. L. Silversides.—p. 452.
End Results of Therapy in Varicose Veins. H. F. Robertson.—p. 455.
Medical Aspects of Civil Defense. O. M. Solandt.—p. 460.
Clinical and Experimental Studies with Myanasin: Preliminary Report. C. R. Stephen and J. Chandy.—p. 463.
Mental Hygiene Related to Psychosomatic Disorders. G. H. Stevenson.—p. 468.
Intercostal Nerve Block in Treatment and Prevention of Postoperative Atelectasis. J. J. Carroll and F. J. Hogg.—p. 472.
Differential Diagnosis of Chronic Lower Abdominal Pain in Adult Female. B. D. Best.—p. 474.
Supportive Treatment During Anesthesia. J. A. Vining.—p. 479.

Chronic Abdominal Pain in Women.—Best emphasizes that operation in the absence of detectable pelvic lesions is seldom justifiable in cases in which chronic pain is the presenting complaint. Surgery in such cases is meddlesome, ineffective and often mutilating; it may lead to a career of

repeated operative insults. Operation in the presence of obvious abnormality must be undertaken with caution and preceded by intensive pelvic study and observation. Not every pelvic deviation from normal is the cause of the patient's pain. Attention must be given to the environmental and psychic factors in the life of the patient. Pelvic surgery for prolapse, fibroids, ovarian tumors, ectopic pregnancy and cancer gives excellent results; pelvic surgery for chronic pain alone is seldom indicated and is often disappointing. Chronic parametritis, adnexitis, endometriosis, abdominal wall fibrositis, irritable colon and some displacements are the most frequent organic causes of chronic abdominopelvic pain in the adult woman.

Illinois Medical Journal, Chicago

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Treatment of Meningitis. F. H. Top.—p. 267.
United States Public Health Service and Private Practice of Medicine. H. E. Hilleboe.—p. 272.
X-Ray Demonstrable Lesions of Colon. F. J. Hodges.—p. 279.
Carcinoma of Prostate Gland. H. Culver and W. J. Baker.—p. 282.
Temporal Arteritis: Report of Case. R. M. Hoyne.—p. 292.
Management of Thyrotoxicosis. F. S. Deneen.—p. 296.

Temporal Arteritis.—According to Hoyne, temporal arteritis characteristically affects aged white persons and causes severe head pains and generalized symptoms such as weakness, loss of weight, fever and mental confusion. He reports the history of a retired farmer, aged 75, who had this disorder. Temporal arteritis may be suspected and diagnosed by the presence of tortuous, nodular, hyperemic and exquisitely tender temporal arteries; the disease seems to be an inflammatory process. It is probably not a localized but rather a generalized polyarteritic disorder. Virtually all patients with temporal arteritis eventually recover after a prolonged illness. In this regard temporal arteritis seems to differ from periarteritis nodosa, which usually proves fatal within one year. There is no specific treatment. In some cases, including the one here reported, improvement has seemingly been accelerated by bilateral resection of the temporal arteries. This condition is undoubtedly commoner than heretofore regarded, and as the life expectancy of the population continues to increase, more and more of these cases of temporal arteritis will probably be encountered.

Journal of Clinical Endocrinology, Springfield, Ill.

7:665-728 (Oct.) 1947

*Syndrome of Congenitally Aplastic Ovaries with Sexual Infantilism, High Urinary Gonadotropins, Short Stature and Other Congenital Abnormalities: Tabular Presentation of 25 Previously Unpublished Cases. H. Lissner, L. E. Curtis, R. F. Escamilla and Minnie B. Goldberg.—p. 665.
Clinical Evaluation of Dienestrol, a Synthetic Estrogen. A. E. Rakoff, K. E. Paschkis and A. Cantaro.—p. 688.
Simple Quantitative Colorimetric Method for Estrogenic Steroids. H. Cohen and R. W. Bates.—p. 701.
Experimental Use of Testosterone Compounds in Premature Infants. E. K. Shelton, A. E. Varden and J. S. Mark.—p. 708.
Goiter on an Iodine-Free Diet Grown by Hydroponics, and Excluding Any Goiter Noxa. J. F. McClendon and W. C. Foster.—p. 714.
Pheochromocytoma with Diabetes: Case Report and Discussion. M. G. Goldner.—p. 716.

Congenitally Aplastic Ovaries.—Lissner and his associates review 25 cases of ovarian aplasia syndrome. Six of these have been verified by exploratory laparotomy or peritoneoscopy. In 15 cases tests were made for urinary gonadotropin excretion and all showed abnormally high titers. Five of these were among the 6 cases verified pathologically. There remained 9 cases in which the diagnosis may be regarded as presumptive but seems justified because of the characteristic clinical picture. This consists of primary amenorrhea in association with genital infantilism, short stature, stocky build with shield chest and sometimes webbed neck, cubitus valgus, and other congenital abnormalities. Severe sexual infantilism and primary amenorrhea existed in all but 2 of the 25 cases. One of these exceptions, a girl aged 22, had well developed breasts and had had a single spontaneous period five years before. In only 5 of the 25 patients did the height exceed 57 inches (145 cm.), and only 1 patient was over 61¼ inches (156 cm.) in height. As a rule, the stunting of growth was noticed early in childhood. The clinical differentiation from other types of dwarfism and sexual infantilism in females is discussed. It is particularly

important to distinguish this syndrome of congenital ovarian aplasia from primary pituitary infantilism. Adequate and prolonged estrogenic therapy is indicated and can be counted on, as a rule, to produce adequate mammary development, growth of sexual hair, more mature external genitalia and, when administered orally in cyclic fashion, regular periodic bleedings. These benefits bolster the patient's morale. The recognition of 25 cases from a single clinic suggests that this syndrome is not as rare as suggested by the few cases thus far reported.

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Journal of Nutrition, Philadelphia

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Fat and General Nutrition.—Scheer and his associates say that earlier studies have shown beneficial effects on rats from the inclusion of liberal amounts of fat in the diet. Growth, resistance to undernutrition, physical capacity and reproductive performance were all improved on synthetic diets containing 10 to 40 per cent of fat, as compared with similar diets lacking fat. The present report includes data on the content of water, protein, fat, ash and calcium in the bodies of rats selected from these experiments. The authors found that in general the fat content of the body is not related to fat content of the diet; rats receiving diets with 20 per cent fat fed ad libitum have the highest content of body fat. Caloric restriction in weanlings or young adult rats results in relatively high water content and extremely low fat content; ash also increases in young adult rats. The greater body size on diets containing liberal amounts of fat as compared with fat-free diets is not the result solely of deposition of fat. The effects of varying fat content in the diet on resistance to undernutrition and on physical capacity are not the result of differences in gross body composition.

Kansas Medical Society Journal, Topeka

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Traumatic Diaphragmatic Hernia.—Vin Zant and Hibbard say that in many cases of herniation through a lacerated diaphragm diagnosis is not made until months after injury. A hernia should always be looked for in crushing injuries to the abdomen and perforating injuries of the lower part of the thorax and upper part of the abdomen. They report the case of a youth, aged 19, who was hospitalized because of nausea, vomiting and pain of seven days' duration in the epigastric region. At the age of 12 years he was struck by a car, and a door handle was embedded in his back. Four months later, shortly after wrestling, he complained of pain in the epigastric region and vomited. An appendectomy was performed. A year later, the same symptoms returned and he was operated on for obstruction of the bowel, but the site of the obstruction was not found. Transnasal duodenal suction and enterostomy completely relieved his obstruction. At the age of 17 he was hit in the right upper quadrant of the abdomen while playing football; there developed nausea and frequent vomiting, which were relieved by conservative therapy. Roentgen studies at this time revealed a diaphragmatic hernia which undoubtedly was the cause of his previous disability. Lacerations of the diaphragm are usually small, and stomach or colon herniations are most prone to strangulation. The high mortality of traumatic diaphragmatic hernia is due to the occurrence of intestinal obstruction and strangulation. Operative treatment should be employed early and not as a last resort.

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Minnesota Medicine, St. Paul

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Hospital Facilities for All. V. O. Wilson.—p. 1060.
Rural Medical Service. F. J. Hirschboeck.—p. 1065.

30:1114-1224 (Nov.) 1947

- Epidemiology and Recent Developments in Poliomyelitis. J. G. Molner.—p. 1145.
*The Sick Child in Poliomyelitis. E. S. Platou.—p. 1149.
*Treatment of Muscular After Effects of Poliomyelitis. M. E. Knapp.—p. 1152.
Recent Advances in Management of Ear, Nose and Throat Problems. O. E. Hallberg.—p. 1156.
Amebic Abscess of Liver with Bronchohepatic Fistula: Report of Case and Discussion of Emetine Cardiotoxicity. B. I. Heller and W. E. Jacobson.—p. 1161.
Clinical Use of Folic Acid. M. A. Keil.—p. 1167.

Poliomyelitis.—Platou discusses some of the factors that deserve consideration in caring for a child with poliomyelitis. He agrees with Stimson that in the average spinal case a schedule of rest and relaxation, of proper nursing care and of measures to combat increased muscle tension should be put in the hands of well trained personnel. In addition to fever, prostration and toxemia, patients with bulbar involvement manifest dysphagia, nasal regurgitation, voice change, palatine weakness with lost gag reflex, pooling of mucus in the oropharynx and the airways, pulse changes, hypertension and pallor associated with varying degrees of cyanosis. In these cases psychologic reassurance, supervision of fluid and electro-

lyte balance and proper nutrition are important. Aspiration must be prevented by means of posture, suction and tracheotomy; the use of the respirator should be avoided except in the high spinal type. Oxygenation should receive careful attention. Avoidance of bladder and bowel retention, reduction of intracranial pressure, prophylaxis against infection and supportive measures are other factors that deserve attention in bulbar cases. The dramatic saving of life by means of suction, tracheotomy and oxygenation was impressive in a series of almost 400 seriously ill patients. The newer ideas in physical therapy continued to be meritorious. Also important were the round-the-clock vigilance of the physician and the expert service furnished by the nurse and physical therapist to conserve the physiologic functions necessary to life.

Muscular After Effects of Poliomyelitis.—According to Knapp the serious muscular after effects of poliomyelitis include shortening, weakness or paralysis of muscle and loss of muscular efficiency, often called incoordination. Muscle shortening must be combated at the earliest possible date, long before fibrosis has occurred. The author begins treatment immediately after the diagnosis has been made, even while the temperature is still elevated. The more vigorous the treatment of this symptom, the more likely it is to be successful. The essential element in the treatment of muscle shortening is motion. If the patient has sufficient muscular strength to allow him to perform voluntary motion against gravity, activity alone will often cause relaxation of the muscle. In patients who are too weak to carry out motion actively, the motion must be performed for them passively. If pain is a potent factor, and especially during the early stages of the disease, hot packs are a useful adjunct in the treatment of shortening of muscle. The packs to be effective should be so hot that the patient squirms. This is not a heat application in the true sense of the word; it is really a reflex stimulus. Among the drugs that have been used for relaxing muscular tension the author mentions prostigmine, curare, quinine and atropine. Muscular strength can be increased by producing hypertrophy in those muscles which still have innervation. The most effective method of causing hypertrophy of muscle fiber is the use of heavy resistance exercises, making the patient contract the muscle against a nearly maximal load. Nerve crushing or neurotripsy, introduced by Billig and Van Harreveld, is mentioned. With regard to the restoration of muscular efficiency, the author says that muscles work not independently but in combination with each other. Therefore, if the part is used in the manner which is desired, the various correlating muscles and neurons will learn to interact with each other to produce the action which has been practiced.

Philippine Medical Association Journal, Manila

23:389-446 (Sept.) 1947

- Modifications of Cyclodialysis and Implantation of Metallic Magnesium in Eye in Treatment of Glaucoma. J. Eusebio.—p. 393.
- Incidence of Postcataract Infection After Liberation. A. R. Ubaldo, C. V. Yambao and A. C. Pastoral.—p. 399.
- Report of Case of Retinitis Pigmentosa: Review of Recent Literature. M. G. Tan.—p. 407.
- Refractive Errors in Concomitant Tropias. V. Delfin.—p. 417.
- Case of Altitudinal Hemianopsia. M. G. Tan.—p. 423.
- New Approach in Treatment of Chronic Dacryocystitis. T. V. Bernardo and M. Dimanlig.—p. 427.

23:447-496 (Oct.) 1947

- Results of Further Experimental Studies on BCG Vaccine. W. de Leon and A. P. de Roda.—p. 447.
- Transurethral Resection and Deep X-Ray Therapy in Surgical Management of Cancer of Bladder. L. F. Torres Jr. and P. S. Chikiamco.—p. 453.
- Problem of Renal Lithiasis in Orthopedic Hospital. A. I. Reyes.—p. 455.
- Spinal Cord Injuries. A. T. Zavalla and P. A. Morales.—p. 459.
- Further Role of Culion Leper Colony. C. B. Lara.—p. 465.

Psychosomatic Medicine, Baltimore

9:287-352 (Sept.-Oct.) 1947

- Studies of Syncope: IV. Biologic Interpretation of Vasodepressor Syncope. G. L. Engel and J. Romano.—p. 388.
- Preliminary Report on Psychosomatic Study of Rheumatoid Arthritis. Adelaide Johnson, L. B. Shapiro and F. Alexander.—p. 295.
- Preliminary Study of Significance of Measures of Autonomic Balance. M. A. Wenger.—p. 301.
- Some Aspects of the Dream in Psychosomatic Disease. H. I. Kupper.—p. 310.

Rhode Island Medical Journal, Providence

30:781-843 (Nov.) 1947

- *Anticoagulation Therapy with Heparin/Pitkin Menstruum in Thromboembolic Disease. L. Loewe.—p. 795.
- German Medical War Crimes: Their Nature and Significance. C. F. Enloe Jr.—p. 801.
- Molluscum Contagiosum Treated with Sulfadiazine. B. L. Schiff.—p. 806.
- Medical Record Librarian of Yesterday, Today and Tomorrow. Mary Nunez.—p. 814.

Heparin/Pitkin Menstruum in Thromboembolic Disease.—Loewe says that at the Jewish Hospital of Brooklyn more than 450 patients received thousands of subcutaneous deposits of heparin/Pitkin menstruum for intravascular disease. Of the 251 patients who received this treatment for the venous form of thromboembolic disease, 95 had had from one to six pulmonary embolizations prior to subcutaneous heparin therapy. There were 5 fatalities. Four occurred early in the series and served as an object lesson for standardizing and formulating the program of therapy and dosage schedules. As an offset to these failures there were 7 patients who had multiple pulmonary emboli despite venous ligation and who recovered after the subcutaneous heparin treatment. There were also 22 patients who were successfully treated with heparin in the Pitkin menstruum following single or multiple massive pulmonary embolizations without manifestation of peripheral vein involvement; these patients could not conceivably be subjects for ligation of the proximal vein. Subcutaneous heparin was successfully employed in 7 patients following failure of "dicumarol" therapy. Treatment of venous thromboembolic disease with subcutaneous heparin in the Pitkin menstruum was attended with lessened morbidity, prompt and rapid clinical improvement, and little or no residual edema. Exploratory studies in the field of prophylaxis and in the treatment of various arterial thrombotic disorders, including coronary artery thrombosis and peripheral vascular diseases, are sufficiently promising to justify further intensive investigations.

Rocky Mountain Medical Journal, Denver

44:773-868 (Oct.) 1947

- Colorado Presidential Address. J. S. Bouslog.—p. 793.
- Utah Presidential Address. L. A. Stevenson.—p. 796.
- Wyoming Presidential Address. W. A. Steffen.—p. 799.
- Psychiatric Implications of Cancer. H. G. Salomon.—p. 801.
- Anesthesia in Colorado During Nineteenth Century. H. B. Stein.—p. 805.
- Conditioned Reflex Therapy of Chronic Alcoholism, Ten Years' Experience with Method. W. L. Voegtlin.—p. 807.
- Responsibility Teaches. A. Gregg.—p. 812.
- Aerosol Treatment with Penicillin and Streptomycin. O. L. Veach.—p. 816.
- Eye Findings in Repatriated Prisoners of War from Far West. T. M. Van Bergen.—p. 818.

44:870-963 (Nov.) 1947

- Problems in Early Diagnosis and Treatment of Right Heart Failure: Its Significance in Chronic Pulmonary Disease. J. T. Taguchi, S. Dressler and A. Hurst.—p. 888.
- Responsibility of Medical School to Physicians of Utah. R. H. Young.—p. 892.
- Mental Hygiene for Community. F. G. Ebaugh and J. V. Coleman.—p. 895.
- Ocular Changes in Diabetes. A. R. Irving.—p. 898.
- Treatment of Duodenal Ulcer. T. D. Cunningham, J. C. Mendenhall and F. R. Mizer.—p. 899.
- Eye Changes Associated with Thyroid Disease. L. W. Sloan.—p. 901.
- Present Status of Plastic Surgery. T. W. Stevenson.—p. 907.
- Anxiety Manifested by Moderately Elevated Temperatures. Harriot Hunter.—p. 908.

South Carolina Medical Assn. Journal, Florence

43:293-322 (Oct.) 1947

- Medical Legislation in Congress. R. A. Taft.—p. 293.
- Basic Principles in Treatment of Intrathoracic Injury. E. F. Parker.—p. 299.
- Recent Advances in Chemotherapy. J. H. Gibbes.—p. 302.
- Recent Advances in Pediatrics. R. M. Pollitzer.—p. 305.

43:323-352 (Nov.) 1947

- Appraising Our Own Efforts. J. P. Price.—p. 323.
- Gastric Cancer, a Challenge to Medical Profession. G. H. Bunch.—p. 325.
- Recent Advances in Oto-Laryngology. R. MacDonald.—p. 330.
- Recent Advances in Surgery with Special Reference to Vagus Nerve Resection in Treatment of Peptic Ulcer. H. G. Smyth.—p. 331.

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Amebic Abscess of Liver with Bronchohepatic Fistula: Report of Case and Discussion of Emetine Cardiotoxicity. B. I. Heller and W. E. Jacobson.—p. 1161.
Clinical Use of Folic Acid. M. A. Keil.—p. 1167.

Poliomyelitis.—Platou discusses some of the factors that deserve consideration in caring for a child with poliomyelitis. He agrees with Stimson that in the average spinal case a schedule of rest and relaxation, of proper nursing care and of measures to combat increased muscle tension should be put in the hands of well trained personnel. In addition to fever, prostration and toxemia, patients with bulbar involvement manifest dysphagia, nasal regurgitation, voice change, palatine weakness with lost gag reflex, pooling of mucus in the oropharynx and the airways, pulse changes, hypertension and pallor associated with varying degrees of cyanosis. In these cases psychologic reassurance, supervision of fluid and electro-

the use of a sphygmomanometer cuff. Adequate incisions were made to allow free escape of pus, and all sloughs were dissected out. Drainage was maintained by packing the wound open for forty-eight hours with gauze, which was impregnated in the first three groups with penicillin cream (100 units per gram) and in the fourth group with sterile soft paraffin. In the first group 40 patients were treated in the manner previously described and were given intramuscular penicillin in oil and beeswax, 250,000 units daily. The treatment of the 47 patients in the second group was exactly identical with that in the first group, except that the dosage of penicillin in oil and beeswax was reduced to 125,000 units daily. The third group consisted of 61 patients treated with intramuscular sodium penicillin in aqueous solution, 200,000 units daily. The 112 patients of the fourth group had the same operative treatment as those in the other groups, but penicillin was not administered parenterally or used as a local dressing. The end results were similar in all groups, that is, benefit was not obtained from postoperative parenteral administration of penicillin. Bone necrosis, necessitating sequestrectomy, occurred only in patients treated late. Many of these patients had had a fairly intensive course of penicillin before they were seen. The principle of the Bunyan bag was applied to the dressing of large superficial infections of the fingers. After incision and drainage, a sterile rubber finger-cot was rolled over the finger and fixed with adhesive to the base of the finger and 2 cc. of sodium penicillin in water, 10,000 units per cubic centimeter, was introduced under the adhesive band, with a syringe and needle, to flood the finger-cot. A gauze dressing was bandaged lightly over the finger-cot and left undisturbed for two days. On removal of the dressing the wound was clean, and healing took place rapidly thereafter. The use of penicillin-sulfathiazole powder as a postoperative dressing is to be condemned.

2:641-676 (Nov. 1) 1947

- Paroxysmal Tachycardias. M. Campbell.—p. 641.
Delayed Immunity Response. Mollie Barr and A. T. Glenny.—p. 647.
Salt Metabolism in Acute Porphyria: Report of 2 Cases. G. C. Linder.—p. 649.
Spontaneous Rupture of Spleen After Defecation. A. W. N. Druitt.—p. 652.
*Pseudomonas Pyocyanea Meningitis Following Spinal Analgesia. I. M. Davidson.—p. 653.

Meningitis Following Spinal Analgesia.—Davidson thinks that accounts of meningitis following spinal analgesia are infrequent because of "a natural reluctance to report what should be a preventable happening," but he believes that the conscientious recording of such cases is important, if only to emphasize the possible dangers of the method and keep in everyone's mind the importance of a rigid aseptic technic. The author reports 2 cases of meningitis due to *Pseudomonas aeruginosa* following spinal analgesia. One patient recovered after treatment with sulfamerazine; the other died. The source of the infection could not be traced. In a similar case the source was so-called sterile water in the operating theater.

Transactions Royal Soc. Trop. Med. & Hyg., London

41:171-268 (Oct.) 1947

- Ainhum in a Leper. E. Montestruc, and P. Caubet.—p. 187.
Mixed Deficiency Diseases in India: Clinical Description. R. Passmore.—p. 189.
Enzyme Purification of Polyvalent Antivenene Against Southern and Equatorial African Colubrine and Viperine Venoms. E. Grasset and P. A. Christensen.—p. 207.
Zinc Sulfate Floation of Feces. R. Elsdon-Dew.—p. 213.
Sedimentation Rate in African Peasant with Special Reference to Trypanosomiasis. C. Hollins and E. Lewis-Fanning.—p. 217.
Serum Lipides in Tropical Sprue. D. A. K. Black and J. A. Simpson.—p. 241.
Transitory Neurologic Signs in Sleeping Sickness. M. Gelfand.—p. 255.
Influence of Suspending Fluid on Survival of Sporozoites in Vitro. Isabel M. Tonkin.—p. 259.
*Suppressive and Schizonticidal Value of Paludrine (100 Mg.) in Vivax Malaria. A. W. Woodruff.—p. 263.

Paludrine in Vivax Malaria.—Woodruff gives an account of 20 cases of benign tertian malarial relapses which were treated with "paludrine," N₁-p-chlorophenyl-N₃-isopropyl biguanide. In 15 cases of benign tertian malaria treated with a single dose of 100 mg. of "paludrine" on one day only, the response was slow in comparison with that obtained following standard treatment

for three days with quinine and followed by quinacrine. This single dosage of "paludrine" did, however, bring the attack under control. No toxic manifestations were noted during the period of six months in which 20 patients were receiving 100 mg. of "paludrine" weekly. During this period, however, 1 proved short term relapse of vivax malaria was encountered, and 3 possible clinical attacks were also reported. During the six months' period immediately following the six months of "paludrine" administration, 1 proved long term relapse and 1 possible clinical relapse were encountered. These results suggest that a single dose of 100 mg. of "paludrine" is a suboptimal dose in an acute attack. Doses of 100 mg. weekly occasionally fail to keep the blood sufficiently free from parasites to prevent short term relapses. This weekly dosage, continued for a period of six months, does not invariably prevent the occurrence of long term relapses when use of the drug is discontinued.

Acta Chirurgica Scandinavica, Stockholm

96:97-198 (Oct. 20) 1947

- Subcutaneous Retroperitoneal Duodenal Rupture. G. K. Lauritzen.—p. 97.
Treatment of Skin Avulsion Injuries of Limbs. H. Schjelderup.—p. 109.
Treatment of Hirschsprung's Disease with Report of an Operated Case (Extraperitoneal Resection of Megacigmoid in One Stage). E. Arenander.—p. 123.
*Experimental and Clinical Observations on Granulomas Caused by Talc and Some Other Substances. A. Saxén and P. I. Tuovinen.—p. 131.
Injuries of Bone and Bone Marrow After Intraosseous Injections: Experimental Investigation. L. Wallden.—p. 152.
Innervation at Common Bile Duct-Duodenal Junction from Surgical Point of View. C. Franksson.—p. 163.
New Plate for Osteosynthesis. H. Söiland.—p. 178.
Comparison Between Clinical and Histologic Diagnosis in Toxic and Atoxic Goiter, with Special Regard to Kraus's Staining Method. S. Dahlstedt.—p. 185.

Granulomas Caused by Talc.—In their experiments on rats Saxén and Tuovinen used pure talc and also powders containing talc, such as two sulfonamide wound powders containing 35 and 33 per cent talcum powder, respectively. They also used a powdered sulfonamide drug without any other admixture. The animal experiments established that a small quantity of talc introduced into uninjured tissue is generally resorbed in a short time without leaving any traces, but a large quantity may cause considerable foreign body granulomas. Similar granulomas occur regularly in injured tissues into which talc is rubbed. In this case comparatively small quantities of talc cause granulomas which are preceded by purulent inflammations in the necrotic area. A chemically clean sulfonamide powder disappears from the animal tissue without causing histologic changes. Histories of 6 patients with foreign body granulomas are examined. The authors believe that contamination of the tissue with talc through a torn glove is a rare occurrence. Granulomas may easily develop if sulfonamide wound powders containing talc are introduced into the operative field. In certain rare circumstances even pure sulfonamide powder may give rise to granulomas.

Archiv für Kinderheilkunde, Stuttgart

134:1-64 (June) 1947

- *Value of Bone Marrow Puncture as Diagnostic Aid in Children with Typhoid. K. Rogge.—p. 1.
*Investigations on Blood Coagulation in Children: Coagulation Time, Prothrombin Time and Bleeding Time in Children with Infectious Diseases and in Children with Nutritional Disturbances. J. Ströder and G. Karp.—p. 6.
Sexuality During Puberty. W. Hallermann.—p. 22.
Does Sulfanilamide Influence Clinical Course and Blood Picture of Typhoid in Children? H. Brieger.—p. 33.
Stenosis of Splenic Vein in Children. E. Grundler.—p. 50.

Bone Marrow Puncture for Diagnosis of Typhoid in Children.—At Rogge's clinic sternal puncture was done in 47 of 185 children with typhoid. Bacilli could be demonstrated in the sternal punctate in a much higher percentage of cases than was possible by blood culture. While blood culture yields bacilli as a rule only during the first week of the disease, sternal puncture does so practically throughout the entire course of the disease. Frequently the sternal punctate was the only reliable proof of the presence of typhoid. The author regards puncture of the sternum or tibia as an important diagnostic aid when typhoid is suspected in children.

Blood Coagulation in Children with Infectious Diseases.—Ströder and Karp review observations on 255 children up to 14 years of age. They found that in scarlet fever, measles, typhoid, paratyphoid, pulmonary tuberculosis and whooping cough the coagulation time is normal, even if these diseases appear in the hemorrhagic form. Diphtheria, particularly the toxic form, increases the blood coagulation time. The prothrombin time is subject to considerable changes even in healthy children, and the aforementioned infectious diseases did not increase it to abnormal values. Hypoprothrombinemia was observed in about half of the cases of intestinal infections, particularly in Flexner's dysentery. The hypoprothrombinemia that accompanied infectious disorders showed a certain parallelism with the clinical course. About a fourth of the infants with nutritional disturbances had hypoprothrombinemia, and the prothrombin times were highest in the severest nutritional disturbances. However, as in the intestinal infections of older children, the prothrombin time does not parallel the temperature changes and in both conditions it may persist after recovery. Prothrombin time and coagulation time may show conformity in toxic diphtheria but do not necessarily have to do this. The bleeding time was unchanged in the infectious diseases that were investigated.

Cardiologia, Basel

12:1-132 (No. 1 & 2) 1947. Partial Index

- Recent Study of Electrocardiogram Taken from Man with One Lead Attached to Thoracic Wall. B. Kisch.—p. 1.
 *New Concept of Surgical Treatment of Mitral Stenosis. I. Mahaim.—p. 11.
 *Contusio Cordis with Late Rupture of Left Ventricle. C. Hedinger.—p. 46.
 *Digitalis and Strophanthin Preparations Considered as Drugs Which Favor Action of Chemical Mediators: Their Action on Normal Myocardium, in Myocardial Insufficiency and in Diseases Different from Those of Circulatory Apparatus. D. Danielopolu.—p. 66.

Surgical Treatment of Mitral Stenosis.—According to Mahaim, narrowing of the left auroventricular orifice need not always be due to a stenosing defect of the mitral valve. It may be caused by a tumor-like polyp in the left auricle which increases with time and which may involve the mitral ring; it may even pass through the ring and be lodged occasionally in the left ventricle. The tumor is often myxomatous and has the tendency to produce peripheral myxomatous embolism. Angiocardiography may reveal a lacunar auricular picture which could be considered as a definite roentgenologic sign. Surgical removal of the mitral polyp would be the only treatment for this condition.

Contusion of the Heart.—Hedinger reports the occurrence of sudden death in a soldier aged 53, nine days after he was kicked on the chest by a horse. Death resulted from infarction of the anterior wall of the left ventricle and rupture after a traumatic, thrombosing, dissecting aneurysm of the descending branch of the left coronary artery. For three days after the accident the patient had no complaints and returned to his unit to do his usual work. The grave traumatic coronary injury was masked completely during this period. A prolonged period of control even in the absence of clinical symptoms is suggested to prevent late lesions in cases of severe thoracic trauma in which a contusion of the heart seems likely.

Mechanism of Action of Digitalis and Strophanthin.—The results of experiments with digitalis and strophanthin preparations carried out by Danielopolu on guinea pigs, dogs and frogs, as well as therapeutic trials on man, suggest that these drugs have a nonspecific action and a specific or toxic action. The nonspecific action consists in the inactivation of cholinesterase by promoting the action of acetylcholine and inactivation of the adrenolytic factors by promoting the action of sympathin. By their inactivating action on cholinesterase the digitalis and strophanthin preparations stimulate the secretion of epinephrine. In their effect on the adult myocardial fibers and on the vascular fibers the favorable action of the therapeutic doses of these drugs on the activity of sympathin surpasses their favorable action on the activity of acetylcholine; in the embryonal cardiac fiber the latter influence surpasses the former. With small doses the action is inverse. Both the specific and the nonspecific action may be exerted with any dose, but the former becomes evident only with high doses which are

not used for therapeutic purposes. Systolic arrest of the action of the heart is to be considered as an effect of the toxic action. Digitalis and strophanthin preparations exaggerate the excitability of the nervous centers by their inactivation of cholinesterase in promoting the action of acetylcholine. The drugs exaggerate the excitability of the cardiac nerves by increasing the excitability of the neurons and the sympathomimetic and parasympathomimetic reactivity of the myocardium. The drugs are stored not only in the myocardium but in all the tissues of the body. Occurrence of sudden death after big doses of strophanthin (Fränkel's method) is due to the accumulation of acetylcholine because of the inactivating action of the drug on cholinesterase. It might be possible to increase the dose of strophanthin in grave cases by combining it with atropine, as the latter prevents the parasympathomimetic action of acetylcholine. Certain faculties of the digitalis preparations may be corrected and strengthened with atropine and with physostigmine, but strophanthin should never be combined with physostigmine. Digitalis and strophanthin preparations are not exclusively cardiac tonics but vegetative drugs which can be useful whenever one wants to promote the action of sympathin and acetylcholine. The dosage of these drugs should be based on the determination of their inactivating action on cholinesterase.

Giornale di Medicina, Palermo

4:97-168 (May-June-July) 1947. Partial Index

- *Streptomycin in Therapy of Enterocolitis and Acute Nutritional Disturbances in Infants. B. Cimino and G. Purrzellera.—p. 130.
Streptomycin in Gastrointestinal Disorders in Infants.—Streptomycin was given to 17 infants with gastrointestinal disorders due to shigella and colon bacilli. The drug was given in daily doses which varied from 10 to 40 mg. per kilogram of body weight for from six to eight days. Sulfanilamide therapy had previously failed. Good results were obtained in all cases; pyuria was a complication in 1 case. It was controlled simultaneously with the gastrointestinal disease.

Klinische Wochenschrift, Würzburg

24/25:97-160 (Nov. 15 and Dec. 1) 1946. Partial Index

- *Reanimation by Artificial Circulation. H. Schwegk.—p. 104.
 Significance of Electrocardiogram Taken with Electrode Attached to Esophagus for Recognition of Old Infarcts of Posterior Wall. K. Spang.—p. 111.
 Influence of Local Disturbances of Blood Perfusion on Cholinesterase of Blood. N. Schümmelfeder.—p. 113.
 Changes in Serum Cholinesterase in Anaphylaxis. F. Heim.—p. 115.
 Regular Occurrence of Specific Proteinase During Menstrual Cycle. H. Roemer.—p. 116.

Reanimation by Artificial Circulation.—Schwegk produced circulatory arrest in dogs by rapidly withdrawing the blood from the femoral artery. Under morphine-ether narcosis the blood pressure in the other femoral artery was recorded with a mercury manometer. Artificial restoration of the circulation was then performed by pumping the blood from the right jugular vein and by reinjecting the artificially arterialized blood into the femoral or carotid artery. A modified Gibson apparatus was used in these experiments. The results demonstrated that artificial blood perfusion of the entire animal is possible in principle. Respiration and heart action could be restored by artificial circulation up to fifteen minutes after clinical death. In addition to respiration the functioning of vasomotor centers was manifested by the occurrence of Traube-Hering waves. The term reanimation appeared justified in only 2 instances in which heart action and respiration continued spontaneously after artificial circulation was discontinued. The duration of "clinical death" in these instances was seven and five minutes, respectively. Pupillary, corneal and tendon reflexes returned. In the first instance the dog survived the experiment for twenty-six hours, in the second instance only for five hours, but consciousness was not restored completely. Reanimation of the heart may be obtained without difficulty. A complete reanimation of the central nervous system could not be achieved because of the irreparable damage in the cerebral cortical areas resulting from the circulatory arrest, which lasted in these instances for seven and eight minutes, respectively, from the moment in which the blood pressure reached the zero point.

Artificial circulation in man may be considered in cases in which temporary cardiac failure may be bridged some time before the definitely expected circulatory arrest, e. g., threatening arrest of heart action during surgical intervention.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:2717-2796 (Sept. 27) 1947. Partial Index

Treatment of Gonorrhea at University Clinic of Utrecht During and After the War. J. J. Zoon and J. W. H. Mali.—p. 2727.
Blue Baby with Arteriovenous Aneurysm of Lung. I. Boerema and R. P. Brilman.—p. 2736.

*"Dripping Nose" as Early Symptom of Hunger Edema. J. van der Hal.—p. 2746.

*Severe Corneal Changes During Treatment with Arsphenamine Preparations. T. A. J. van Doormaal.—p. 2751.

"Dripping Nose" as Early Symptom of Hunger Edema.

—While in a concentration camp where hunger edema was prevalent, van der Hal noted that a constantly dripping nose, in the absence of any other sign of rhinitis, was often a sign of impending hunger edema. The dripping nose persisted after the hunger edema developed.

Corneal Changes During Treatment with Arsphenamine.—According to van Doormaal, treatment with arsphenamine preparations may cause serious corneal lesions. He describes the case of a man, aged 47, who, while being treated with arsphenamine and a bismuth compound for syphilis developed a severe dermatitis, conjunctivitis and bilateral corneal ulcers which perforated. The patient recovered very slowly from his dermatitis and became almost blind. Corneal lesions which develop during arsphenamine treatment usually but not always appear in the course of arsphenamine dermatitis.

Nordisk Medicin, Gothenburg

35:1779-1822 (Aug. 29) 1947. Partial Index

*Prognosis in Disseminated Sclerosis and Disseminated Encephalomyelitis Judged in Relation to Initial Stage of Disorders. Differential Diagnosis in This Stage. P. Thygesen.—p. 1779.

Hospitalstidende

Treatment of Tendency to Bleeding During Administration of "Dicumarol." Erik Tage-Hansen and K. Jansen.—p. 1792.

Finska Läkarellskapet Handlingar

Biuret Reaction. Quantitative Determination of Total Protein of Serum by Photometry. B. Laurent and B. A. Lamberg.—p. 1795.

Hygiea

Surgical Treatment of Gunshot Wounds of Head. B. G. Egorov.—p. 1807.

Toxic Fulminant Laryngobronchitis (Malignant Pseudocroup). B. Söderling.—p. 1812.

Prognosis in Disseminated Sclerosis and Disseminated Encephalomyelitis.—Differential diagnosis in the initial stage of disseminated sclerosis and disseminated encephalomyelitis was used to judge prognosis. In the initial stage the diagnosis was disseminated sclerosis in 84 of Thygesen's 144 cases, disseminated encephalomyelitis in 29, probable disseminated sclerosis or disseminated encephalomyelitis in 31. On revision of the diagnosis after from eight to fifteen years the diagnosis disseminate encephalomyelitis could be upheld in only 17 of the 29 cases and typical disseminated sclerosis had developed in 7; 4 of the 17 died during the first year, the others were free from symptoms after the first year or year and a half. In 19 of the 31 cases the disorder developed as disseminated sclerosis, mostly of benign type, and in 12 the diagnosis of disseminated sclerosis or disseminated encephalomyelitis was excluded. Of the 110 patients with disseminated sclerosis, 14 were fully able to work and 13 partly able to work; in 52 there had been steady progression with early incapacity for work, and 31 were dead. Almost all the benign cases had an acute or subacute onset with total or partial remission during the first year, but the same manner of start and early course were also seen in fully half of the cases with persistent progression. In practically all cases with insidious start and steady progression during the first year the course was unfavorable. The prognosis seems to depend more on the spread of the underlying process than on the intensity of single symptoms and to be poorer in the cases with early ocular symptoms in connection with other symptoms and in those with

the early stage marked by incoordination of varied origin. Nystagmus as an isolated symptom has no prognostic significance. The course is more favorable in the older age group.

Praxis, Bern

36:725-740 (Oct. 23) 1947

*Recent Investigations on Function of Thrombocytes Eliciting Retraction. A. Fonio.—p. 725.

Activity of Surgical Service in Hospital of Detachment of Elbensee (Concentration Camp of Mauthausen). F. Wetterwald.—p. 729.
Hypovitaminosis C in High Mountain Valley in Valais. R. Maeder.—p. 733.

"Fericillin." W. Jadassohn, P. Boymond and H. Isler.—p. 737.

Retraction of Coagulum Elicited by Thrombocytes.—Fonio separated the plasma by centrifugation of blood which had been made uncoagulable with sodium citrate. The coagulation was then brought about by recalcification. By this new test tube method photographs could be taken from the plasma clot. Retraction of the plasma coagulum occurred provided that the plasma contained thrombocytes. There was no retraction if the plasma did not contain thrombocytes. A pronounced retraction occurred when an emulsion of thrombocytes in isotonic solution of sodium chloride was added to the plasma which did not contain thrombocytes. Addition of an extract of thrombocytes did not produce retraction, which occurs only when intact platelets are added. Addition of corpuscular elements which are foreign to the blood proved ineffective. A retractozyme could not be extracted from the retracted coagulum. The new retraction test was performed on a patient with thrombopenia whose thrombocyte count was 75,000. The plasma coagulum proved completely irretractable three times when the new test tube method was used, and the fourth time there was only a feeble indication of retraction. A normal retraction occurred in all the tests in which an emulsion of normal thrombocytes had been added to the patient's plasma. The degree of the retractility of the thrombopenic coagulum may be determined more exactly by testing the retraction on the thrombocyte containing citrated plasma than by the evaluation of the behavior of the blood coagulum alone.

36:757-776 (Nov. 6) 1947

Treatment of Chilblain with Adrogel (Histamine-Acetylcholine) Ointment. H. P. Hasler.—p. 757.

*Clinical and Electroencephalographic Study of Hyperpyretic Convulsions. M. Neyroud.—p. 759.

Hyperpyretic Convulsions.—Neyroud reports the occurrence of hyperpyretic convulsions in 70 children, 39 boys and 31 girls between the ages of 2 months and 6½ years. The highest incidence of hyperpyretic convulsions was observed at the age of 18 months. History revealed the occurrence of non-epileptic convulsions in grandparents, parents or siblings of 67 patients and the occurrence of epileptic seizures in grandparents or parents of 5. There was also a high incidence of meningitis, particularly among the siblings of the patients. Eighteen patients were of an extremely nervous type, 14 presented behavior disorders and 6 had disturbances of speech. Four of 10 children aged over 3 years still had enuresis. In the majority of the patients the hyperpyretic convulsions may be considered as a common accident which has nothing to do with epilepsy, and the prognosis of which is favorable. They may be classed among the "essential convulsions" of infancy. These hyperpyretic convulsions may be caused by sudden disturbances of the cerebral circulation or ischemia followed by hyperemia, and they are closely connected with the sudden rise of temperature. However, the high incidence of hereditary and constitutional stigmas among the 70 patients justifies a certain caution in evaluating the late prognosis of hyperpyretic convulsions; in 2 of them the hyperpyretic convulsive syndrome was the first manifestation of epilepsy. The electroencephalogram will be of considerable aid in the differential diagnosis of hyperpyretic convulsions of children who are normal with regard to their nervous system from those who may be epileptic in the future. In 51 of the 70 patients the encephalogram revealed normal condition. In 9 patients the electroencephalogram was doubtful. Four encephalograms were definitely abnormal, and 2 presented epileptic patterns in children who not only had pure hyperpyretic convulsions but also manifested a definite clinical aspect of epilepsy.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

COMPLAINTS ALLEGEDLY DUE TO EXCESSIVE AMOUNTS OF ORANGE JUICE

To the Editor:—A number of patients who have spent the winter in Florida, and some who have spent only a few days or weeks, tell me that after they have had large quantities of orange juice a sort of toxic condition develops. They complain of vertigo, nausea, listlessness and dermatitis. This is not a matter of a few glasses of juice a day, but enormous quantities of it. At first I thought that perhaps this was partly imagination and partly due to the fact that they distended themselves too much, but I have heard this complaint over a period of six or eight years, and patients are still complaining. Is there any real basis for this condition, or have any reports appeared in the literature?

Allen H. Moore, M.D., Doylestown, Pa.

ANSWER:—It is unlikely that the symptoms complained of are the specific effect of orange juice, except in persons who are allergic to some constituent of orange juice. Other than that, toxic symptoms could be attributed only to excessive amounts of substances contained in oranges, substances which do not cause ill effects in usual quantities. This is improbable. None of the principal constituents, water, sugars, citric acid, ascorbic acid (vitamin C) and minerals, are known to cause specific symptoms in amounts which would be ingested under the conditions described. Water intoxication requires tremendous quantities. Ascorbic acid can be taken in amounts much greater than would be probable in the form of orange juice without symptoms. The same is true of the carbohydrate, minerals and organic acids. Experiments in which maintenance of complete saturation of the body with ascorbic acid was obtained by drinking quarts of orange juice daily were without such an effect except for some distaste for the orange juice. The nausea mentioned in the query may be the mild nausea or distaste commonly associated with the ingestion of large amounts of single foods, especially when accompanied by distention because of the bulk. In the absence of more details, an opinion on the nature of the dermatitis cannot be given. It would appear that the other symptoms are more probably the result of lack of acclimation, known to affect visitors to warm climates, aided perhaps by overindulgence in food and drink, than the specific effect of the orange juice. No references to such an effect of orange juice have been found.

THE IODINE NUMBER OF THE FATTY ACIDS

To the Editor:—What is the significance and manner of determination of the iodine number as applied to unsaturated fatty acids in allergic diseases of the skin? Please give one or two references. M.D., New York.

ANSWER:—Inasmuch as iodine is absorbed at the double bonds in the carbon chain, the iodine number of the fatty acids derived from blood is a measure of the relative degree of unsaturation of the fatty acids. (For preparation of fatty acids and determination of iodine number, *J. Biol. Chem.* 94:401, 1931-1932; *ibid.* 112:457, 1935-1936.)

This value in normal persons is, in the range of 100 to 120 depending on the age group. It has been found that in 50 to 80 per cent of patients with chronic eczematoid dermatitis, the iodine number of the serum fatty acid is below 100. No direct relation between allergy and the iodine number of the serum fatty acids has been observed; however, at times patients with chronic eczema appear to be benefited when fats rich in unsaturated fatty acids are added to the diet (*THE JOURNAL*, Dec. 7, 1946, p. 855; *Am. J. Dis. Child.* 73:1 [Jan.] 1947).

ARGYRIA

To the Editor:—BAL has been recommended for the elimination of arsenic from the tissues. Kindly inform me if it has been used successfully in the elimination of silver as in argyria?

Hugh Macdonald, M.D., Peoria, Ill.

ANSWER:—There appear to be no references in medical literature to the use of BAL in the treatment of argyria. However, on theoretic grounds beneficial results would not be expected, inasmuch as silver deposits in the skin are in metallic insoluble form and are not available for attraction to the sulfhydryl (SH) groups of the BAL compound.

TREATMENT OF IVY POISONING

To the Editor:—I recently had a case of poison ivy. The patient appeared in my office in the acute phase and I gave him an injection of "Sherman poison ivy-oak extract." I was subsequently severely criticized by the dermatologist, who claims that it should only be used as a prophylactic measure and not as treatment. Please comment.

M.D., New York.

ANSWER:—The practice of giving injections of poison ivy and poison oak extracts in the acute stage of the dermatitis is a common one and has been urged on the members of the medical profession by the manufacturers of such extracts; therefore, severe criticism should not be meted out to one who follows what was accepted as good practice. However, the injection of such extracts during the acute stage is of doubtful value inasmuch as immunization against any of the many sensitizing agents requires months and even years rather than hours. The Council on Pharmacy and Chemistry has recently revised its statement on rhus preparations to omit claims for use of these agents in treatment of ivy, oak or sumac dermatitis (*N. N. R.* 1947, pp. 15-16). Bathing the affected areas twice daily for fifteen minutes with potassium permanganate solution in the strength of 1:2,000 together with daily intravenous injections of sodium thiosulfate or calcium thiosulfate will probably be as effective as any other method of treatment known at the present time. Freezing the areas with ethyl chloride has been advised, but this should be carried out with a great deal of caution by the physician.

CASTRATION IN WOMEN FOLLOWING MASTECTOMY

To the Editor:—What is the present status of opinion concerning castration in the female as a preventive measure for possible recurrence of cancer of the breast following mastectomy? Is sterilization by roentgen radiation as effective as surgical oophorectomy in these cases? Would the use of estrogen therapy be contraindicated in the treatment of the artificial menopausal symptoms that might follow the foregoing procedure?

M.D., Philadelphia.

ANSWER:—Routine castration by irradiation or surgical operation following radical mastectomy is by no means a settled question. Many surgeons, however, are resorting to post-mastectomy castration, and they claim improved results for their cases. L. Halberstaedter and A. Hochman (*THE JOURNAL*, 131:810-816 [July 6] 1946) are convinced that interruption of estrogenic stimulation can effect objective and/or subjective improvement in breast cancer. J. S. Horsley (*Surgery* 15:590-601 [April] 1944) advocated the removal of both ovaries when performing radical operation for cancer of the breast in young women. G. W. Horsley (*Am. J. Surg.* 125:703-714 [June] 1947) observed a five year "cure" rate of 43.5 per cent in radical mastectomy cases without oophorectomy as compared with 76.5 per cent in those of the premenopausal period with oophorectomy. His results were much better than those obtained with roentgen ray castration, though the few patients treated with roentgen therapy showed better results than those without either irradiation or surgical castration. However, T. de Cholnoky (*THE JOURNAL*, 125:739 [July 8] 1944) maintains that it is not exactly known yet whether the elimination of ovarian function has the effect of reducing or enhancing carcinogenesis. It may, therefore, be hasty to advocate bilateral oophorectomy for all women in the premenopausal age with early breast cancer.

Estrogen therapy should not be given to overcome the menopausal symptoms following the removal of a breast except in women past 60 years of age who have metastases. In this group estrogens will relieve the pain due to metastases. In younger women the male hormone, testosterone propionate, should be used instead of estrogens to relieve the menopausal symptoms.

HAY FEVER IN HIGH SCHOOL BOYS

To the Editor:—I have two boys in high school who have hay fever and chronic nasal sinusitis. They have had the best allergists and nose and throat specialists available (without obtaining much relief). I have had psychologic tests on them in several universities and they rate superior, college material. What careers should I try to steer them into because of their respiratory weaknesses (which happen to be hereditary on both sides of the family)?

M.D., Tennessee.

ANSWER:—It would be a grievous error to steer these boys into any career for which they have no compelling urge. Other than staying away from extremely dusty occupations or those in which strong chemical fumes are involved, these boys are not handicapped for any career. On the other hand, if the facts of the case justified it, a change to a different climate might be advantageous. The boys should be given a free choice, with some judicious guidance on the part of the father. Above all, they should not be made to feel whatever handicap they may have.

RECURRENT ULCERS OF THE MOUTH

To the Editor:—For six months I have been treating a white man aged 21 for recurrent ulcers of the mouth, inside of lips and tongue. They are round, punched out, raised, gray, quite deep, and painful, and they bleed slightly on occasion. They last for about seven to ten days and recur at intervals of about two weeks to three months. This condition was first noticed three years ago in Alabama while he was in the Army. He has been completely worked up by smears and cultures, which have all been negative. He was treated with high potency vitamin therapy, ultra-violet and dyes of all kinds. However, the ulcers recur with fair regularity. These attacks are preceded by a bout of constipation. He has had a gastrointestinal series and proctoscopic examinations, and all were negative. There may be a psychiatric factor in this. Any help will be appreciated.

Harry Grodzicker, M.D., Brooklyn.

ANSWER:—Certain data which are not given would help in the diagnosis. It is assumed that the serologic test results and lungs are not abnormal. It would be of help to know whether the ulcers are preceded by vesicles or papules. An allergic cause would be improbable if there is a negative family, personal and contact history and angioneurotic edema of the face often coexists. A recurrent granulocytopenia could be excluded as a cause by blood counts. The description does not fit a dietary deficiency, lupoid or chemical origin or the lesions of erythema multiforme. The necrotic ulceromembranous ulceration of Vincent's infection seems unlikely from the location and bacteriologic data. Nerve lesions are improbable if the lesions are bilateral. Dissimilar metal fillings may produce an electric current, but the lesions are said to be rarely ulcerative. Herpes simplex may cause a gingivostomatitis with similar lesions, from a reflex or central cause, but the lips usually crust and there are often general symptoms.

The diagnosis is probably to be found under the general term, aphthous ulceration. One form is the common canker sore, which follows a vesicular onset; but the lesion most like that in the present case is called periaadenitis mucosa necrotica recurrens—it occurs on the tongue, lips and cheeks, lasts one to two weeks and follows a papular onset. The ulcers may be superficial or deep; they are painful and may bleed; they tend to recur at varying intervals.

The etiologic basis of aphthous ulcers is uncertain, with emotional, allergic, psychic, toxic and gastrointestinal causes being mentioned. The treatment is likewise indefinite. The mouth often is a mirror of the intestinal tract, and intestinal function is affected through innervation; a vagotonia sounds quite possible in this case.

It is suggested that the case be considered with the foregoing comments in mind and that specific therapy be applied if indicated. The following empiric measures may also be tried: one of the atropine-like drugs, either routinely before meals or during the constipation period, to interrupt the neurogenic influence; the use of a mild saline laxative at bedtime; continuance of a high vitamin intake in the form of a multivitamin concentrate plus 100 mg. of nicotinamide per day for several weeks, and applications of a 10 per cent solution of "butyn" (3-dibutylamino-propyl *p*-aminobenzoate sulfate) or "acriviolet" (a proprietary mixture of acriflavine and methylosaniline chloride).

Unless the foregoing suggestions prove definitely effective, it would be wise to have the man consult a neuropsychiatrist.

SCLERODERMA AND PREGNANCY

To the Editor:—A white woman aged 21 who had bilateral cervical sympathectomy two years ago for scleroderma, is now two months pregnant. Is pregnancy contraindicated? I should also like to know if Raynaud's disease is any contraindication to pregnancy.

John Shelton Reed, M.D., Kingsport, Tenn.

ANSWER:—Neither scleroderma nor Raynaud's disease contraindicates pregnancy. The progress of either disease is unaffected by child bearing. When scleroderma is sufficiently extensive it may interfere with free respiration. There may in such cases be mechanical difficulties with expansion upward of the gravid uterus.

"SPOON NAILS"

To the Editor:—A woman aged 40 worked in the San Francisco shipyards for two years during the war. She now has several finger nails bowed outward from the base up, and the other nails are showing signs of change. There is no hereditary or other pertinent history. Is there any treatment for this condition?

M.D., California.

ANSWER:—The description of the woman's nails leads to the supposition that the so-called "spoon nails" have developed; this is a dystrophy the etiologic and pathologic bases of which are variable, complex or obscure. Treatment is as a rule of no avail.

ETHYLENE DISULFONATE

To the Editor:—I would appreciate information about the treatment of allergic eczema in children with ethylene disulfonate, especially the percentages of successes and failures, and any undesirable by-effects.

Erwin Levi, M.D., New York.

ANSWER:—Ethylene disulfonate has been the subject of considerable controversy. First, there is some doubt that a compound of the alleged structure of ethylene disulfonate exists. In view of the enormous dilution, 10^{-16} (1 part in a million billion), it is impossible to analyze the commercial article ("allergosil" brand of ethylene disulphonate) and find anything but water. Second, the theoretic bases which underly the clinical utility of this compound are exceedingly doubtful. Third, the concomitant drug and dietary restrictions which are insisted on by the manufacturer seem totally irrational on the basis of present knowledge. But these points may be of practical importance, as they may explain some of the improvements that are occasionally seen after use of the article.

As far as its use in eczema in children is concerned, there have been favorable reports by Wasson (*Arch. Pediat.* 60:511-517 [Sept.] 1943 and Bartlett (*Arch. Pediat.* 61:311-316 [June] 1944). These reports are uncritical, and in neither are there adequate controls. Archibald (*Arch. Pediat.* 62:219-222 [May] 1945) came to the conclusion that any effect the product had was the same as that of distilled water. He pointed out that distilled water has been used in various allergic conditions on a nonspecific basis and with occasional good results, equal in percentage to those he obtained with ethylene disulfonate. In evaluating the result of treatment with this drug in eczemas or other allergic conditions, it should be recalled that the proponents do much more than merely administer the drug and also that a hypotonic solution injected intramuscularly will have certain nonspecific effects, which may occasionally yield a clinical result. Much of the pertinent literature is summarized in the report by the Council on Pharmacy and Chemistry in *THE JOURNAL*, Aug. 31, 1946, page 1495.

HONEY IN THE DIET IN HEART DISEASE

To the Editor:—I should like information on the striking effects of oral administration of bees' honey in aiding the therapy of heart diseases—organic and function in nature. For many years I have given my cardiac patients, instead of glucose injections intravenously two times a day, 15 Gm. of bees' honey. I can confirm from personal experience an excellent effect. Bees' honey is the best nourishment of heart muscle. What is the scientific basis of this striking effect? Please discuss the rationale of this therapy.

N. Costa, M.D., Herzlia, Palestine.

ANSWER:—There is no justification in the literature for this statement that bee's honey is the best nourishment of the heart. All glucose is good food for the myocardium. A high carbohydrate diet is practically always prescribed for patients with myocardial insufficiency. Further observations should be made on honey to determine whether it is better than any other substance.

Honey is defined by Shuette and Baldwin (*Food Research* 9:244, 1944) as the nectar and saccharine exudation of plants, gathered, modified and stored in the comb by the honeybee. Chemically it is a natural concentrated unrefined syrup of invert sugar and flavored according to the floral source. The main component is 75 to 80 per cent invert sugar, a conversion product of sucrose. The minor components are organic acids, pigments, nitrogen-containing components or compounds and pollen. Seven members of the B vitamin complex (particularly nicotinic acid and pantothenic acid, riboflavin, pyridoxine and thiamine) and vitamin C (ascorbic acid) have been identified in honey. There are small amounts of iron, copper, sodium, potassium, magnesium, calcium, manganese and phosphorus, all of which have been shown to be essential to good nutrition in animals. Commercial processes for clarifying reduce the vitamin content 33 to 50 per cent. Honey has been used as a levulose tolerance test of liver function.

Glucose is as effective as any monosaccharide, and invert sugar is normally changed to glucose in the liver. Fructose is considered to be better at glycogen formation than glucose; galactose is less so. Glucose when injected is absorbed and causes an increase in liver glycogen. Some is converted to muscle glycogen, and some is oxidized. Fructose may be converted slowly to glucose in muscle. The only sugar that may be directly oxidized in the muscle is d-glucose (dextrose). The usefulness of any carbohydrate, therefore, depends on the ease with which it is converted into d-glucose.

Honey is a good source of carbohydrate and would be rational in the dietary and dietotherapy of cardiac patients manifesting myocardial insufficiency.

The vitamins, particularly nicotinic acid, and the minerals may contribute some to the nutritive value of honey over that of ordinary glucose. These considerations might give some scientific basis for the observation, but the observations should be confirmed before discoursing on the theoretic possibilities.

ASTHENOPIA AND CONTACT LENSES

To the Editor:—A patient has a high refractive error, otherwise his eyes are organically sound. He feels comfortable with his present glasses and is able to read and do other close eye work for many hours without undue fatigue of the eyes. However, after an hour or so of driving his car or witnessing a double feature movie he feels a definite tightening of the muscles of the eyeball. This progresses so that at the end of two or three hours his eyes feel like "tightened cords." Usually this tightness recedes as he rests his eyes. However, occasionally a severe headache and pain in the eyeballs result. The patient has noticed this trouble for the past eight years. Increase in the trouble has simultaneously progressed with the increase in the refractive error, as evidenced by the 4 successive prescriptions for glasses. He has been under the care of competent ophthalmologists. The question arises whether this "asthenopia," if it can be so called, can be corrected by properly prescribed contact lenses. The patient's work necessitates a considerable amount of driving.

Chester C. Burski, M.D., Chippewa Falls, Wis.

ANSWER:—Contact lens are recommended and being used in keratoconus and other conditions characterized by irregular corneal astigmatism, in ametropia, for corneal protection in lagophthalmos, trichiasis and ectropion, in high unilateral myopia, in unilateral aphakia, in albinism and coloboma of the iris. They are useful as a substitute for spectacles in sports, as football and swimming, and for cosmetic purposes by actors and actresses.

Contact lens will frequently allow normal vision when this is not possible with ordinary spectacles, but their most enthusiastic advocates do not recommend them for the relief of asthenopia. They are considerably more troublesome than ordinary spectacles, and probably less than 70 per cent of those fitted can wear them for long periods with complete satisfaction. This is particularly true of those who do not absolutely require this type of correction.

In that this patient can do close work for long periods without difficulty, it seems likely that the refractive error is properly corrected. Investigation should be directed toward determination of the muscle balance, duction power, the presence of induced vertical prism in his spectacles and their centration. The cause of the asthenopia should be determined and corrected.

DESIGNATION AND RELATIVE FREQUENCY OF BLOOD GROUPS

To the Editor:—How do the A, B, AB and O blood groups correspond to the old style groups of 1, 2, 3 and 4? Give relative rarity of groups A, B, AB and O in per cent of general population. M.D., Ohio.

ANSWER:—The use of letters for the blood groupings was first suggested by Landsteiner in 1901. Jansky (1907) suggested groups 1, 2, 3 and 4 corresponding with the frequency of the blood groups, whereas Moss in 1910 reversed the numbers. For this reason some confusion resulted in the use of the latter two systems. Most of the hospitals in the United States are using the Landsteiner system and have discarded the Jansky or Moss nomenclature. Such a step was recommended by the Public Health Committee of the League of Nations, and it is known as the international nomenclature.

The following table gives the corresponding groups and the relative frequency in per cent of the general population:

	Blood Groups			
	O	A	B	AB
International	1	2	3	4
Jansky	4	3	2	1
Moss	4	3	2	1
Percentage distribution	45	43	8	4

MEDICATION FOR PINWORM DURING PREGNANCY

To the Editor:—Is it safe to use the usual pinworm medication in pregnancy?
Mary L. Rosenstiel, M.D., Freeport, Ill.

ANSWER:—Yes, it is safe to give the usual medication for pinworm (*Oxyuris vermicularis*) in pregnancy. Exceedingly free elimination is necessary, but violent purging of the bowel should be avoided to protect the products of gestation. Hexylresorcinol is an efficient medicament. The adult dose is one 0.2 Gm. pill, not to be chewed or crushed. A package for a single complete treatment is supplied in one vial, containing five of the 0.2 Gm. pills, taken successively until the desired result is obtained.

A DIAGNOSTIC PROBLEM

To the Editor:—A white man aged 54 came to me about three months ago with complaints of acute stomatitis and conjunctivitis. The condition started suddenly with nausea, a chill and intense burning and smarting of the eyes with a profuse mucous discharge, stuffiness of the nose, sore throat and intensely tender tongue and mouth. Examination revealed the following: The temperature was 100 F. orally, and there were intense conjunctivitis and blepharitis; nasal congestion; intense glossitis and cheilitis, and large ulcers in the buccal mucosa with a heavy white exudate. The roof of the mouth and the pharynx were very red, and there were many different sized blebs, some of which were full of blood-tinged fluid. The gums were sore and swollen, and the angles of the mouth were tender. Red and white blood count, sedimentation rate, Wassermann and agglutination tests and urinalysis all were negative. The man had felt well until the night before, when he was attending a business meeting. He said that his eyes started to burn and discharge; his lips and gums began to swell until he had to take his teeth out. He had had nothing out of the ordinary to eat, and he does not drink or smoke. He has had three such attacks at intervals of four to six weeks during the last four months. The condition has run a course of about ten days previously and cleared up spontaneously. I have given penicillin and "pyribenzamine" but am not convinced that they do any good.

Leo R. Hawkes, M.D., Preston, Idaho.

ANSWER:—The history and observations in this interesting case might be resolved into a more exact restudy of some of the component parts as stated. First, have the patient keep a written record of his food intake, stating the quantities et cetera. All oral and parenteral medicaments should likewise be included. Second, make a detailed allergic study and analysis. Third, obtain appropriate smears and cultures of the lesions of the oral mucous membrane. Fourth, have a review of the oral mucosa by a specialist in oral medicine.

The grand summary of all these observations will lead to the final common path of the ultimate line of therapy.

INCREASING PATIENT'S TOLERANCE TO PENICILLIN

To the Editor:—I have attempted to treat a patient with chronic purulent bronchitis by penicillin aerosol; unfortunately, he has shown a pronounced sensitivity to the drug. I tried another type of penicillin by another manufacturer in the hope of avoiding reactions, but he manifested similar reactions to the second type of drug. The patient is reluctant to try another type of penicillin. I, too, hesitate to subject him to the manifestations, severe shortness of breath and a constrictive tightness in the chest, that followed the use of the drug. Since he already has some strain on the right side of the heart as a result of a long-continued pulmonary condition, I consider that further trials would be dangerous. Would it be possible to give him skin tests with the various types of penicillin by different manufacturers, using the patch test? If this is feasible, I should like a description of a method for preparing and reading such patch tests.

Louis V. Blum, M.D., Baltimore.

ANSWER:—If a patient has become sensitized to penicillin he will react to all samples of the antibiotic. It has been shown that sensitization is due to penicillin itself and not to any impurities contained in the product. It has been reported recently (Peck, S. M.; Siegal, S., and Bergamini, R.: Successful Desensitization in Penicillin Sensitivity, *THE JOURNAL*, August 30, p. 1546) that the repeated injection of small amounts of penicillin three times a week will increase the patient's tolerance to the antibiotic so that repeated small doses of 20,000 to 30,000 units may be given without reaction. The initial desensitizing dose recommended was 400 units, and the dose was doubled every three days until the patient tolerated doses as high as 20,000 units at a time. Skin tests with crystalline penicillin can be carried out in the usual manner. Patch tests are unnecessary.

NEUROLOGIC SYMPTOMS FOLLOWING INJECTION OF MERCURIAL

To the Editor:—The answer on page 396, *The Journal*, Oct. 11, 1947, on the subject, "Neurologic Symptoms Following Injection of Mercurial," the authority responsible ignores the systemic "mercuraphylline injection, now marketed as . . . itself to a discussion of the sciatic nerve an . . . Since I have observed a similar reaction in a patient to whom I was administering "mercuripurin" intravenously, this anatomic reply to the problem seems inadequate.

My patient was receiving weekly intravenous injection of "mercuripurin" 2 cc. Approximately two hours following each injection there regularly developed numbness, tingling and severe cramps in the lower part of the legs and in the feet. These symptoms persisted on each occasion for almost twenty-four hours. After four reactions, all of increasing severity, I discontinued administration of the drug. Diuresis had been profuse and adequate. There was no ascertainable neurologic residual.

This case, together with that of the earlier correspondent, indicates that the problem is more a true reaction to the drug than an involvement of the sciatic nerve.

A. H. Ulm, M.D., New York.

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PROPHYLACTIC USE OF INFLUENZA VIRUS VACCINE

An Instance of Inadequate Protection Against Influenza A

ARIE C. VAN RAVENSWAAY, M.D.
Boonville, Mo.

The development of a method for the prevention of infections with influenza A and B virus was one of the important projects undertaken during the recent war by the Commission on Influenza, under the direction of the Surgeon General, United States Army. This effort culminated in the mass production of a vaccine consisting of formaldehyde-inactivated strains of influenza virus, types A and B, and its large scale use in the United States Army. At present this vaccine is commercially available for civilian use and is being utilized widely as a prophylactic agent for virus influenza. The widespread acceptance of this procedure is a commentary on the excellence of the medical research conducted under official direction during World War II. There are, however, certain difficulties in evaluating prophylactic measures for diseases such as virus influenza. The reported clinical studies on which the presently accepted preventive value of this method is based, while impressive, may not accurately foretell results which will be obtained in conditions not encountered in the original studies.

It is not the purpose of this report to deny the value of the prophylactic use of influenza virus vaccine. Sufficient amply documented instances of its effectiveness are in the literature to indicate otherwise. The incident to be described in which the procedure was essentially a failure is reported to indicate the need for further study of the applications and limitations of the method and of the vaccine now available for use.

On Dec. 18, 1946, 237 of 527 cadets at Kemper Military School, Boonville, Mo., received 1 cc. of influenza virus vaccine procured by special order from Eli Lilly & Company and shipped from their Kansas City depot. The material was refrigerated from the time of arrival until its administration twenty-four hours later. Parents of all cadets had previously been circularized, and the group receiving the vaccine was selected on the basis of parental approval or disapproval after the exclusion of a small group because of previous allergic manifestations. The age group involved ranged from 14 to 18 years. No evidence is apparent that the selection of the treated group was influenced by age or by any other factor except the desire of the parent.

During the remaining weeks of 1946 and until mid-February 1947, relatively little respiratory disease was

observed in the cadet corps. Those instances seen were characterized by a mild pharyngitis, minimal malaise and fever and a short course. On February 15, however, an outbreak appeared, characterized by sudden onset, rather severe constitutional symptoms (fever, malaise, generalized aching) and but little evidence of exudative rhinitis, pharyngitis or bronchitis. The clinical appearance of these cases was considered to be typical of virus influenza. At this same time similar epidemics were appearing in other schools and communities in central Missouri. The epidemic reached its peak on February 24 with the admission of 27 patients (table 2). The incidence then dropped sharply, and on March 1 admissions for disease of the upper respiratory tract reached the level before the epidemic. During the period from February 15 to March 1, inclusive, 48 patients were admitted for hospitalization in the school dispensary from the vaccinated group of 237 cadets and 79 from the unvaccinated group of 284 cadets. This represents an incidence of 20.2 per cent from the immunized group and 27.8 per cent from the nonimmunized group. All patients admitted either were febrile or became febrile during their period of hospitalization. No useful information is available regarding the less severe infections not requiring hospitalization which are known to have occurred in considerable number. Analysis of the average duration of the febrile period and the average maximum temperatures in the immunized and nonimmunized groups gave information of no apparent significance. This is summarized in table 3.

Samples of blood were collected during the febrile period and after an interval of two weeks from 3 cadets who had not received prophylactic immunization and from 2 cadets who had been so immunized. Through Drs. M. H. Mothersill and N. M. Powell of Eli Lilly & Company these were titrated against living strains of influenza A and B virus, erythrocytes being used as an indicator. The results of these titrations are summarized in table 1. Failure to agglutinate erythrocytes is considered to indicate neutralization of the virus. In all 5 subjects the serum collected during convalescence possessed increased antibody titers against influenza A. In all except 1 case this increase was well defined. In contrast, in all 5 cases there appeared to be a slightly decreased antibody activity against influenza B in the convalescent serum. These observations are considered as sufficient evidence to establish the etiology of the outbreak as influenza A virus.

While the number of cases on which serologic studies were done is small, it is of interest that the initial specimens of serum from the 2 cadets who had received immunization contained substantially higher antibody

titers than those from the unimmunized 3. There appears to be no reason for assuming that this increased titer did not result from the immunization and provides evidence that the vaccine as administered was potent. Similarly, it is of interest that the antibody titers in the convalescent serums from the unimmunized do not exceed the values in the initial specimens from the immunized cadets. In this group of 5 persons it would appear that circulating antibodies were produced as effectively by the vaccine as by the disease.

COMMENT

Speculation as to the reason for the comparative failure of immunization in this group involves the mass of evidence on which influenza vaccination has been developed, and an elaborate discussion seems inappropriate for this report. A few points will be mentioned briefly. Differences of opinion have been expressed

vaccination is considerably longer than a few months when vaccine of a suitable potency is used."

Hirst, Plummer and Friedewald^{1a} have considered the relationship of the incidence of influenza in the general population to the degree of protection afforded a vaccinated group and stated, "There are good grounds for believing that an increased general attack rate of influenza would be accompanied by a smaller degree of difference of incidence between vaccinated and normal population." This is mentioned because the attack rates in the outbreak concerned in this communication were 20 per cent (vaccinated) and 28 per cent (unvaccinated), in comparison with the 2.2 per cent (vaccinated) and 7.1 per cent (unvaccinated) incidence described in the reports of vaccination in the epidemic of 1943-1944.^{1c}

Salk and Francis,^{1c} however, did not agree with this opinion of Hirst and co-workers, and stated, "Con-

TABLE 1.—Influenza Antihemagglutination Test of Human Serums

	Final Dilution of Serum								Strain	Bleeding
	1:8	1:16	1:32	1:64	1:128	1:256	1:512	1:1,024		
Vaccinated										
J. W. C.	0	0	0	0	+	++	+++	++++	PRSA	1st
	0	0	0	0	+	+	++	++++	PRSA	2d
	0	0	0	0	0	+	+++	++++	Weiss A	1st
	0	0	0	0	0	0	+	++++	Weiss A	2d
	0	0	0	0	0	+	+	++++	Lee B	1st
	0	0	0	0	0	0	++	++++	Lee B	2d
P. F. B.	0	0	0	0	0	+++	++++	++++	PRSA	1st
	0	0	0	0	0	0	0	0	PRSA	2d
	0	0	0	0	0	+++	+++	+++	Weiss A	1st
	0	0	0	0	0	0	0	0	Weiss A	2d
	0	0	0	0	0	0	+	+++	Lee B	1st
	0	0	0	0	0	+	++	++++	Lee B	2d
Unvaccinated										
D. S. T.	0	+	+	+++	+++	+++	+++	+++	PRSA	1st
	0	0	0	0	0	0	0	0	PRSA	2d
	0	0	+++	+++	+++	+++	+++	+++	Weiss A	1st
	0	0	+	+++	+++	+++	+++	+++	Weiss A	2d
	0	+	+++	+++	+++	+++	+++	+++	Lee B	1st
	0	+	+++	+++	+++	+++	+++	+++	Lee B	2d
R. E. S.	0	0	0	+++	+++	+++	+++	+++	PRSA	1st
	0	0	0	+	0	+++	+++	+++	PRSA	2d
	0	0	+++	+++	+++	+++	+++	+++	Weiss A	1st
	0	0	0	0	+	+++	+++	+++	Weiss A	2d
	0	0	0	0	0	+++	+++	+++	Lee B	1st
	0	0	0	0	+	+++	+++	+++	Lee B	2d
H. W. E.	0	0	0	0	+	+++	+++	+++	PRSA	1st
	0	0	0	0	0	+++	+++	+++	PRSA	2d
	0	0	0	+++	+++	+++	+++	+++	Weiss A	1st
	0	0	0	0	+++	+++	+++	+++	Weiss A	2d
	0	0	0	0	+	+++	+++	+++	Lee B	1st
	0	0	0	++	+++	+++	+++	+++	Lee B	2d

regarding the composition and concentration of the vaccine and regarding the duration of its effectiveness.¹ In the preliminary report (1944) of the Members of the Commission on Influenza, Army Epidemiological Board,^{1b} evidence was presented that a high reduction in attack rate persisted for not more than six weeks following vaccination. The epidemic reported in this communication began approximately eight and one-half weeks following vaccination. In a recent review of the problem (1946) Salk and Francis^{1c} stated, "Both direct and indirect evidence is available to support the contention that the duration of effectiveness of influenza

is considerably longer than a few months when vaccine of a suitable potency is used."

Finally, mention should be made of the study of vaccination for influenza conducted at the University of California by Eaton and Meiklejohn,^{1d} in which influenza began four to five weeks after inoculation and in which vaccination proved as ineffective as at Kemper Military School. Attack rates were low and the inferior results of vaccination were explained in part on antigenic differences between the infecting strains of virus and those composing the vaccine. To me this appears the most likely explanation of the failure of vaccination at Kemper Military School. The relative merits of influenza virus vaccine produced by different pharmaceutical houses is a frequent subject for discussion. It is not general knowledge that the National Institute of

1. (a) Hirst, G. K.; Plummer, N. M., and Friedewald, W. F.: Human Immunity Following Vaccination with Influenza Virus, *Am. J. Hyg.* 42: 45-56 (July) 1945. (b) A. C. G. ... Report by Members of the Commission on Influenza, *J. A. M. A.* 124: 982-985 (April 1) 1944. (c) Salk, J. E., and Francis, T., Jr.: Immunization Against Influenza, *Ann. Int. Med.* 25: 443-452 (Sept.) 1946. (d) Eaton, M. D., and Meiklejohn, G.: Vaccination Against Influenza: A Study in California During the Epidemic 1943-1944, *Am. J. Hyg.* 42: 28-44 (July) 1945. (e) Salk, J. E.; Pearson, H. E.; Brown, P. N.; Smyth, C. J., and Francis, T., Jr.: Immunization Against Influenza with Observations During an Epidemic of Influenza A One Year After Vaccination, *Am. J. Hyg.* 42: 307-322 (Nov.) 1945.

Health of the United States Public Health Service specifies the strain composition of these vaccines. Undoubtedly, the National Institute of Health is studying the epidemic of last winter with the aim of improving future vaccines.

SUMMARY

An incident is presented in which an outbreak of type A virus influenza occurred in a military preparatory school population of 521 cadets in which approximately 45 per cent had received immunization with influenza virus vaccine fifty-eight days before the outbreak of the epidemic. The reduction in incidence in the immunized group as compared with the non-immunized group, while apparently statistically significant, was insufficient to justify the use of the procedure.

TABLE 2.—Incidence of Influenza Among Vaccinated and Nonvaccinated Cadets

Date	Vaccinated Group (237 Cadets)		Nonvaccinated Group (284 Cadets)	
	No. of Cases	Percentage of Group	No. of Cases	Percentage of Group
January 23.....	..	....	1	0.35
24.....	2	0.84	2	0.7
25.....	..	....	1	0.35
31.....	1	0.42	..	....
February 5.....	..	....	2	0.7
9.....	1	0.42	..	....
11.....	..	....	1	0.35
15.....	..	....	1	0.35
17.....	1	0.42	1	0.35
18.....	..	....	4	1.40
19.....	2	0.84	4	1.40
20.....	..	....	..	....
21.....	1	0.42	3	1.04
22.....	6	2.52	2	0.7
23.....	3	1.26	7	2.45
24.....	7	2.91	20	7.04
25.....	8	3.38	15	5.28
26.....	11	4.64	9	3.8
27.....	6	2.52	5	1.76
28.....	2	0.84	7	2.45
March 1.....	1	0.42	..	....
4.....	..	....	1	0.35
Total, Feb. 15 to March 1, inclusive..	45	20.2	79	27.8

TABLE 3.—Average Duration of Febrile Period and Average Maximum Temperature

	Immunized Group	Nonimmunized Group
Average number days fever.....	2.7	3.0
Average maximum temperature.....	101.6 F. (99.2-104 F.)	101.2 F. (100-104.4 F.)

CONCLUSION

Further critical study is necessary to define the application and limitations of influenza virus vaccine as a prophylactic agent.

ADDENDUM

Since the preparation of this paper other reports relating similar experiences have appeared. Furthermore, it has been shown that the strain of influenza A prevalent during the winter of 1946-1947 is quite dissimilar antigenically from those contained in the influenza virus vaccine available at that time. Vaccine now available contains this strain, which has been designated as FM-1. Reference is made to an editorial, "Influenza," and to "Medical Progress: Influenza" by John H. Dingle, both appearing in the Dec. 4, 1947 issue of the *New England Journal of Medicine*.

INFLUENZA A IN A VACCINATED POPULATION

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Vaccination of man against epidemic influenza has given promising results in controlled studies during the past few years. Whereas earlier experiments yielded suggestive, equivocal or negative data, the development of vaccines prepared by various means from allantoic fluid infected with influenza virus led to the demonstration of definite protective effects by such preparations both under conditions of epidemic¹ and experimental exposure of vaccinated persons to influenza virus.² Thus the reports of the members of the Commission on Influenza of the Army Epidemiological Board indicated a reduction in the incidence of the disease of about 70 per cent in the influenza A epidemic of 1943¹ and of 90 to 95 per cent in the influenza B outbreak of 1945.³

Encouraging as these results were, reservations had to be made because of proved antigenic differences between various strains of influenza viruses of either type. Such differences were readily demonstrable in the animal experiment for both influenza A⁴ and B,⁵ and also by the Hirst technic of inhibition of hemagglutination.⁶ The role of these antigenic differences in problems of diagnosis and prophylaxis of the disease appeared to be of minor importance in earlier studies

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From the Children's Hospital of Philadelphia (Department of Pediatrics, University of Medicine) and the Department of Bacteriology.

1. (a) A Clinical Against Influenza, Commission on Influenza, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, Preventive Medicine Service, Office of the Surgeon General, United States Army, J. A. M. A. 124: 982-985 (April 1) 1944. (b) Francis, T., Jr.: The Development of the 1943 Vaccination Study of the Commission on Influenza, Am. J. Hyg. 42: 1-11 (July) 1945. (c) Rickard, E. R., Thigpen, M., and Crowley, J. H.: Vaccination Against Influenza at the University of Minnesota, ibid. 42: 12-20 (July) 1945. (d) Hale, W. M., and McKee, A. P.: The Value of Influenza Vaccination When Done at the Beginning of an Epidemic, ibid. 42: 21-27 (July) 1945. (e) Eaton, M. D., and Meiklejohn, G.: Vaccination Against Influenza: A Study in California During the Epidemic of 1943-1944, ibid. 42: 28-44 (July) 1945. (f) Hirst, G. K.; Plummer, N., and Friedewald, W. F.: Human Immunity Following Vaccination with Formalinized Influenza Virus, ibid. 42: 45-56 (July) 1945. (g) Salk, J. E.; Menke, W. J., and Francis, T., Jr.: Clinical, Immunological Evaluation of Vaccination Against Influenza, ibid. 42: 57-93 (July) 1945. (h) Magill, T. P., and Sugr, J. Y.: An Evaluation of Vaccination Against Influenza, ibid. 42: 94-105 (July) 1945.

2. H Stokes, J., Jr.: Demonstration of the Efficacy of Vaccination Against Influenza Type A by Experimental Infection of Human Beings, J. Immunol. 46: 163-175 (March) 1943. Francis, T., Jr.; Salk, J. E.; Pearson, H. E., and Brown, P. N.: Protective Effect of Vaccination Against Induced Influenza A, Proc. Soc. Exper. Biol. & Med. 55: 104-105 (Feb.) 1944; J. Clin. Investigation 24: 536-546 (July) 1945. Salk, J. E.; Pearson, H. E.; Brown, P. N., and Francis, T., Jr.: Protective Effect of Vaccination Against Induced Influenza B, Proc. Soc. Exper. Biol. & Med. 55: 106-107 (Feb.) 1944; J. Clin. Investigation 24: 547-553 (July) 1945.

3. Francis, T., Jr.; Salk, J. E., and Brace, W. M.: The Protective Effect of Vaccination Against Epidemic Influenza B, J. A. M. A. 131: 275-278 (May 25) 1946. Hirst, G. K.; Vilches, A.; Rogers, O., and Robbins, C. L.: Effect of Vaccination on the Incidence of Influenza B, Am. J. Hyg. 45: 96-101 (Jan.) 1947.

4. Magill, T. P., and Francis, T., Jr.: (a) Antigenic Differences in Strains of Human Influenza Virus, Proc. Soc. Exper. Biol. & Med. 35: 463-466 (Dec.) 1936; (b) Brit. J. Exper. Path. 19: 273-284 (Oct.) 1938. Smith, W., and Andrews, C. H.: Serological Races of Influenza Virus, ibid. 19: 293-314 (Oct.) 1938.

5. Eaton, M. D., and Beck, M. D.: A New Strain of Virus of Influenza B Isolated During an Epidemic in California, Proc. Soc. Exper. Biol. & Med. 48: 177-180 (Oct.) 1941. Gordon, I.: Demonstration of Antigenic Differences Between Strains of Influenza B, J. Immunol. 44: 231-236 (July) 1942.

6. (a) Hudson, N. P.; Sigel, M. M., and Markham, F. S.: Antigenic Relationship of British Swine Influenza Strains to Standard Human and Swine Influenza Viruses: The Use of Chicken and Ferret Antisera in Red Cell Agglutination, J. Exper. Med. 77: 467-471 (May) 1943. (b) Hirst, G. K.: Studies of Antigenic Differences Among Strains of Influenza A by Means of Red Cell Agglutination, ibid. 78: 407-423 (Nov.) 1943.

but lately has been shown to be of some significance.^{10, 11} The experience gained during an outbreak of influenza A in March 1947 emphasized clearly the difficult problems presented by these strain differences in both diagnosis and prevention of the disease. It is the aim of this paper to present the findings and to analyze

TABLE 1.—*Influenza Epidemic at School L*

Comparison Between Vaccinated and Nonvaccinated Students

	All Students		Vaccinated Students		Non-vaccinated Students	
	No.	%	No.	%	No.	%
Students.....	521	100	464	89	57	11
Cases of influenza in infirmary.....	183	35	166	36	17	30
Cases of influenza in dormitories.....	95	18	84	18	11	19
Cases in infirmary						
Average days of temperature over 99.....			1.9		2.8	
Average days in infirmary.....			3.7		4.3	
Average height of temperature.....			101.0		101.0	

and discuss these difficulties as illustrated by the study of an influenza outbreak in a large boarding school for boys.

EPIDEMIOLOGIC AND CLINICAL DATA

Early in March 1947 an epidemic of influenza type A occurred in a school for boys in New Jersey. The institution had 521 students enrolled at the time of the outbreak. Observed cases of the disease amounted to 278, or 53 per cent of the student body, before the epidemic had run its course. Of this number 183, or 35 per cent, were admitted to the infirmary, whereas 95, or 18 per cent of the student body, although given a diagnosis of influenza on clinical grounds, were not considered sufficiently ill to require admission.

At first it appeared that the disease had been introduced from another boys' school whose student population had recently recovered from a similar epidemic. A group of about 25 students had come down to the school in New Jersey for a basketball game on March 1. The first cases of the outbreak were considered to have occurred on March 2, a time compatible with the known incubation period of influenzal infection. However, following further investigation, it became apparent that 4 cases of disease of the upper respiratory tract which appeared similar in nature to the epidemic illness had occurred during the last week of February. Serologic tests done subsequently strongly suggested that at least 3 of these cases must be counted as the first overt cases of the outbreak.

The disease assumed epidemic proportions on March 2, with 7 patients admitted to the infirmary. On the following three days there were 21, 14 and 24 admissions, respectively. The peak of the epidemic was reached on March 6 and 7 with 31 and 32 cases, respectively. After this time the number of patients admitted to the infirmary fell off until spring vacation began, March 19. Thus the outbreak showed the rapid rise and fall so familiar in institutional epidemics of influenza.

The epidemic disease appeared simultaneously in a number of widely separated dormitories on the campus. On the first day four of the houses were affected. The following day saw admissions from all but three of the twelve dormitories. Two of these three had cases on the third day and the last on the fourth day after onset of the epidemic.

The epidemic was of unusual interest inasmuch as 88 per cent of the students had been vaccinated early in December 1946 with a commercial influenza vaccine

of combined types A and B. Of those who had received the vaccine, 54 per cent were considered to have been affected either moderately (admission to infirmary) or mildly (confinement to dormitory), whereas 49 per cent of the small group of students who were not vaccinated became ill. Of the vaccinated, 36 per cent had cases of moderate and 18 per cent had cases of mild disease. The corresponding figures for the nonvaccinated group were 30 and 19 per cent, respectively. Table 1 summarizes these data. It appears, then, that there was no difference between the vaccinated and nonvaccinated students as to susceptibility to the disease.

The illness, in general, was mild, and again no significant differences could be established between the vaccinated and nonvaccinated students. The chief complaints consisted of headache, fatigue, sore throat, cough, general aches and pains and pains in the chest. The average maximal height of temperature was 101 F. in both groups. The temperature rose to 105 F. in 1 person but in 34 per cent of the patients never went over 100 F. The period of elevated temperature varied from one to four days, with an average of 1.9 in the vaccinated and of 2.8 in the nonvaccinated groups. The significance of this difference is questionable, since the nonvaccinated group consisted of only a small number of students. The average time spent in the infirmary was 3.7 and 4.3 days, respectively. These data are included in table 1. Other physical signs noted consisted of flushed face and injection of the mucous membranes of nose, mouth and throat. The local glands in the region of the neck were only slightly enlarged. Injection of the conjunctivas was noted in the majority of the patients. Cyanosis of the lips was noted in many. No abnormalities in the chest were observed except for very occasional transient rales. Complications were few in number, the most important being bilateral otitis media, edema of the throat and early pneumonia of the lower lobe of the left lung with roentgen findings, each in 1 different patient. White blood cell counts taken during the acute phase of the disease were normal in the main, except for a few which showed a count below 5,000. Few of the patients seen were in any great distress, and for the most part they were only slightly incapacitated.

TABLE 2.—*Relationship of L47 Strain of Influenza Virus to Other Strains of Influenza A and Influenza B (Lee) Viruses (Cross Agglutination Inhibition Titers)*

Virus	Serum			
	PRS	Weiss	L47	Lee
PRS.....	192*	12	6	1.5
Weiss.....	12	128	8	2
L47.....	24	24	96	1.5
Lee.....	2	2	2	128

* Titer is the fold reduction of virus activity by a given dilution of specific serum.

LABORATORY STUDIES

Isolation of Virus.—The etiology of the epidemic was established both by isolation of the virus and by serologic means. Several strains of influenza virus, type A, were isolated from throat washings which had been treated with penicillin (500 units per cubic centimeter) and streptomycin (100 units per cubic centimeter) before inoculation into chick embryos by the amniotic route. On first passage, virus was present mainly in the amniotic fluids, although in 1 instance virus was found predominantly in the allantoic fluid. On second

amniotic passage, the viruses grew freely in the allantoic sacs and no hemagglutination was noted in the amniotic fluids. Some strains agglutinated guinea pig red cells to a titer eight to thirty-two times higher than that obtained with chicken red cells in the early passages. These data are suggestive of the O or

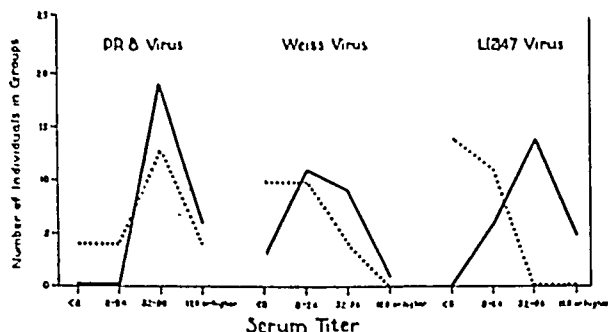


Chart 1.—Influenza at school L. Frequency distribution of titers in red cell agglutination inhibition test with acute and convalescent serums. The dotted lines represent the acute phase serums and the solid lines the convalescent phase serums.

“original” form of influenza virus as described by Burnet⁷ or of the intermediate forms⁸ which, although showing higher agglutination titers with guinea pig red cells than with the chicken erythrocytes (an O phase characteristic), grow well in the allantoic sac (a D phase feature).

One of the isolated strains of virus has been studied more extensively. It has not been sufficiently adapted as yet to mice by the intranasal route to produce infection in high dilution, nor has it shown any toxic activity⁹ when injected intravenously into mice. The lack of toxicity appears consistent with the general mildness of the disease caused by the virus.

The isolated strain of virus was found to be antigenically only remotely related to the PR8 and Weiss strains incorporated in the vaccine used. These strain differences were clearly demonstrated by the use of immune chicken serums¹⁰ as shown in table 2. The hemagglutination inhibition test employing progressively increasing dilutions of virus with constant dilutions of serum was used. The titers in this table represent the factors by which the hemagglutinins of homologous and heterologous viruses were reduced by each serum. It can be seen that the homologous neutralization was always best and that cross neutralization occurred only in the low concentrations of heterologous viruses.

Serologic Studies.—Serums collected from the subjects during and after the outbreak were tested for influenza virus antibodies by means of the hemagglutination inhibition and complement fixation tests. For the hemagglutination inhibition test, the technic already mentioned was employed, a constant dilution of serum (usually 1:80) being used. The “titer” of serum was defined as the ratio of the hemagglutinin end point in saline solution to the hemagglutinin end point in serum (1:80). Thus, if the former end point was 1:1,024, and the latter 1:16, the titer of serum was given as 64.

7. Burnet, F. M., and Bull, D. R.: Changes in Influenza Virus Associated with Adaptation to Passage in Chick Embryos, *Australian J. Exper. Biol. & M. Sc.* 21: 55-69 (June) 1943.

8. Burnet, F. M., and Stone, J. D.: Further Studies on the O-D Change in Influenza Virus A, *Australian J. Exper. Biol. & M. Sc.* 23: 151-160 (June) 1945.

9. Henle, W., and Henle, G.: Studies on the Toxicity of Influenza Viruses: II. The Effect of Intra-Abdominal and Intravenous Injection of Influenza Virus, *J. Exper. Med.* 84: 639-660 (Dec.) 1946.

The details of the method have been described elsewhere.¹⁰ Tests were performed with the PR8, Weiss and L₂47 strains of influenza A virus and, on a smaller scale, with the Lee strain of influenza B virus. Chart 1 shows the distribution of serum titers to the three strains of influenza A virus in 25 paired specimens of acute and convalescent serum. The acute phase serums were collected on the first day of the disease and the convalescent phase serums ten days later. As can be seen in the chart the majority of the acute phase serums contained high titers of antibody to the PR8 strain (32 or higher). This indicated that the vaccine given three months prior to the outbreak had been of satisfactory potency, a fact which was confirmed by the assay in mice of a sample of the vaccine used. The titers against the Weiss strain were decidedly lower. None of the serums showed a high titer to the epidemic virus, the L₂47 strain. The vaccine failed, therefore, to produce sufficiently high and persisting antibody levels to the epidemic virus. This observation is in agreement with the antigenic relationship between the PR8 and L₂47 strains as demonstrated in the neutralization tests with chicken immune serums. The antigenic differences combined with the absence of cross reacting antibodies to the epidemic virus in the blood of the students offers a reasonable explanation for the failure of the vaccination to protect this group.

On comparison of the titers of convalescent serums with those found in the specimens of acute serum, it becomes obvious that the most pronounced rise in antibody level occurred to the L₂47 virus and that there was only a slight increase in titer in the convalescent serums when tested with the PR8 and Weiss viruses. The fact that most persons had high titers to the PR8 virus in the specimen of acute phase serum may account for the failure to demonstrate significant rises in antibodies to this virus in many of the convalescent serums.

Complement fixation tests were conducted according to the method described previously.¹¹ The antigens employed consisted of either the 600 S component,

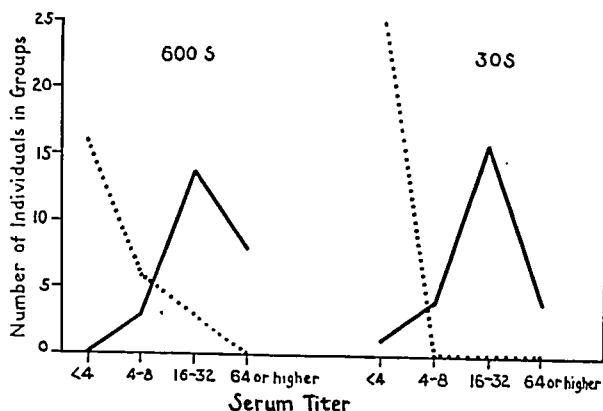


Chart 2.—Influenza at school L. Frequency distribution of titers in acute and convalescent serum complement fixation with PR8 virus. The dotted lines represent acute serums and the solid lines convalescent serums.

which corresponds to the virus particle, or the 30 S fraction, corresponding to the soluble antigen, which reacts type specifically but not strain specifically in the

10. Sigel, M. M., and Davis, W. A.: Influenza at an Army Camp in 1945-1946, to be published.

11. Wiener, M.; Henle, W., and Henle, G.: Studies on the Complement Fixation Antigens of Influenza Viruses Types A and B, *J. Exper. Med.* 83: 259-279 (April) 1946.

complement fixation test.¹² Both preparations were derived from allantoic fluids infected with the PR8 strain. The distribution of titers in the 25 cases during the acute and convalescent stage is shown in chart 2. As can be seen in the chart, many of the acute phase serums which reacted strongly in the inhibition test with PR8 virus exhibited also some reactivity with the 600 S antigen. None of the acute serums fixed complement in the presence of the 30 S antigen. There was a definite rise in antibody levels in the convalescent serums to both antigens. Twenty-two of the second specimens had titers of 1:16 or higher to the 600 S component, and 20 showed similar titers to the soluble antigen. The remaining cases showed some, although less pronounced, reactions.

A comparison of the diagnostic value of the various technics used in these studies is shown in table 3. This table is based on the number of diagnostic positive reactions obtained with the hemagglutination inhibition and the complement fixation tests. A positive result is considered a threefold or greater rise in antibodies, whereas a twofold increase in titer is considered doubtful or suggestive evidence of infection. The table shows that the most sensitive procedures were the hemagglutination inhibition with the epidemic virus, the L₂47

TABLE 3.—Number of Positive, Doubtful and Negative Results Obtained with Red Cell Agglutination Inhibition and Complement Fixation Tests (Based on Comparative Titrations of Acute and Convalescent Serums)

Test	Virus	Positive	Doubtful	Negative
Red cell agglutination inhibition..	PR8	8	11	6
	Weiss	7	8	9
	L ₂ 47	25	0	0
Complement fixation.....	PR8 600 S	24	1	0
	PR8 30 S	23	2	0

strain, and the complement fixation tests with the two PR8 antigens. The hemagglutination inhibition with the PR8 and Weiss strains either failed to detect any rises in antibodies or it yielded doubtful results, in a number of persons whose convalescent serums showed positive responses by the other two procedures.

The fact that rises were noted with the 600 S antigen of PR8 in complement fixation tests but not in the inhibition of hemagglutination requires further study. It has been shown that there existed a straight line relationship between these two reactions as long as the serums studied were free of antibodies to the 30 S antigen.¹¹ It was noted, furthermore, that on sonic vibration of the 600 S particles, an antigen was released that behaved serologically like the 30 S antigen. It is possible, therefore, that the rises in antibodies demonstrated with the 600 S antigen were actually due to some soluble antigen present in the virus particle. The possible presence of other antigens in the 600 S fractions also remains to be explored.

Single specimens of serum were obtained from a number of other persons. Some were from students who had been vaccinated and had not come down with the disease. These showed high hemagglutination inhibition titers to the PR8, lower levels to the L₂47

virus, and mostly did not contain antibodies to the soluble antigen. Another group consisted of persons who had been vaccinated and who subsequently contracted influenza. Their serums contained antibody to the 30 S fraction of PR8 virus in dilutions of 1:8 or higher. Finally, a number of serums were obtained from students who had not been vaccinated and who escaped the disease. Some of these gave high titers with the soluble antigen, suggesting that these students had undergone a subclinical infection; this implication was further substantiated by a high antibody level to the L₂47 virus in three of four serums reacting with the 30 S fraction.

COMMENT

Two phases of this study require some comment: (1) the diagnostic value of the various available serologic tests, and (2) the failure of the influenza vaccine to protect this group of persons. As to the serologic diagnosis of influenza, the inhibition of hemagglutination has been used for this purpose more or less exclusively in the past several years. This test is relatively simple and effective, as long as the infecting strain of virus is antigenically closely related to the test virus and the antibody level in the acute serum is fairly low. However, it was found^{12, 5} that the new strains in the epidemic of 1943 gave positive results in diagnostic tests in a much larger group of cases than the usually employed laboratory strain (PR8). This relative strain specificity constitutes a distinct drawback to the routine use of the hemagglutination inhibition test. The causative agent of a given epidemic or of sporadic cases may not become available for use as an antigen during the epidemic, or the isolation, if successful, may consume considerable time. It would seem important, then, to use diagnostic tests which are less subject to strain specificity. It has been indicated previously^{12a} that, as opposed to the larger virus antigen, the soluble antigen of influenza virus as present in infected mouse lungs is type specific but not strain specific. This has been confirmed with antigens prepared from the chick embryo.^{12b} The use of virus antigen 600 S and soluble antigen 30 S, prepared from the PR8 strain, for the diagnosis of this epidemic showed clearly the superiority of the complement fixation tests. All serums showed significant responses except two, which showed a doubtful rise in antibodies. This is in striking contrast to the results obtained with the PR8 strain in the hemagglutination inhibition tests. It is recommended that both tests be performed in order to secure reliable and complete information in epidemics and sporadic cases of infections of the upper respiratory tract.

In regard to the value of vaccination of man against epidemic influenza, various recently developed vaccines, which have been tested, proved successful in reducing the incidence of the disease in a number of studies.¹³ Protection was observed by Hirst eight days after vaccination,¹⁴ and Hirst and Salk found it to last, at least to some extent, for more than one year after vaccination;¹⁴ on the other hand, Eaton obtained little if any protection after five to six weeks,¹⁶ a finding more in accord with this year's observations.

13. Footnotes 1 and 3.

14. Hirst, G. K.; Rickard, E. R., and Friedewald, W. F.: Studies in Human Immunization Against Influenza: Duration of Immunity Induced by Inactive Virus, *J. Exper. Med.* 80: 265-273 (Oct.) 1944. Salk, J. E.; Pearson, H. E.; Brown, P. N.; Smyth, C. J., and Francis, T., Jr.: Immunization Against Influenza with Observations During an Epidemic of Influenza A One Year After Vaccination, *Am. J. Hyg.* 42: 307-322 (Nov.) 1945.

12. (a) Lennette, E. H., and Horsfall, F. L., Jr.: Studies on Influenza Virus: The Complement-Fixing Antigen of Influenza A and Swine Influenza Viruses, *J. Exper. Med.* 73: 581-599 (May) 1941. (b) Henle, W., and Wiener, M.: Complement Fixation Antigens of Influenza Viruses Types A and B, *Proc. Soc. Exper. Biol. & Med.* 57: 176-179 (Nov.) 1944.

One must now consider means of preventing such disappointing results. There are two points which require particular notice: (a) the epidemic occurred three months after vaccination, and (b) the epidemic strain of virus was notably different from the strains in the vaccine. It seems, then, that one must aim at prolongation of the immune response and increased cross protection. Several steps may lead to achievement of these aims: 1. One may strive to obtain higher antibody titers against the strains included in the vaccine because with rises in the homologous antibody levels the cross reacting antibodies usually also increase. This may be accomplished in several ways: (a) by immunization just prior to or in the early days after onset of an epidemic somewhere in this country (under these conditions, the antibodies will be at their height when needed most; this, however, will be a fairly unpredictable method, and one may not always be in time); (b) by the use of more concentrated vaccines, if one can avoid the untoward reactions by some treatment of the vaccine; (c) by the use of certain adjuvants which increase both the antibody levels and their persistence. The technic of Freund,¹⁵ which employs vaccines emulsified in liquid petrolatum, has been applied to prophylaxis in influenza, first by Friedewald¹⁶ in experimental animals and subsequently in man in this laboratory.¹⁷ The results obtained are rather promising, but liquid petrolatum will have to overcome several clinical objections before it will become generally acceptable. However, the data would suggest that an intensive search should be made for other adjuvants which would be equally effective but less objectionable.

A second general approach may be found in the use of different strains of virus for the vaccine; (a) a systematic search for strains of influenza virus with broader specificity seems indicated, and (b) since it appears that major epidemics are often preceded by localized outbreaks, the isolation of strains of influenza virus in preepidemic outbreaks and the inclusion of such strains in the vaccine will be of value if the subsequent epidemic should be caused by a similar strain. The experience with the Weiss strain, which was isolated in May 1943¹⁸ and used in the successful vaccine in the winter of the same year,¹ may be cited as an example. This approach would be a burden to those charged with the preparation of vaccine and it is doubtful whether enough vaccine could be produced in time to institute large scale vaccinations unless certain of the standardization procedures are dispensed with, as was the case with the 1943 vaccines.

It appears, then, that further investigations are necessary in order to increase the efficacy of influenza vaccines.

SUMMARY

An epidemic of influenza A in a school—three months after vaccination of 88 per cent of the students with commercial influenza A and B vaccine—is reported. There was no evidence of protection, although the specific antibody levels in the patients' serums indi-

cated that the vaccine had been of satisfactory potency. However, the epidemic strain of virus differed decidedly from the strains present in the vaccine, which explains the failure of the vaccine to afford protection. The problem of vaccination against influenza is discussed and suggestions for improving the vaccine are made.

ADDENDUM

Since the submission of this paper, a report of a similar situation by Thomas Francis Jr., Jonas E. Salk, and J. J. Quilligan appeared in the *American Journal of Public Health*, 37:1013-1016 (August) 1947.

PROSTATIC SURGERY AND HEART DISEASE

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Patients with prostatic obstruction, either benign or malignant, fall into an age group in which degenerative diseases of the cardiovascular system are of frequent occurrence. In many of these cases the problem of operability is of vital and immediate importance to both the surgeon and the patient.

The presence of cardiovascular disease immediately raises two questions: 1. The urologist is concerned with the nature and extent of the cardiac lesion and the amount and type of the treatment required to make the patient a safe or a reasonably safe operative risk. 2. Many of the patients who have known cardiovascular disease are vitally interested as to whether or not they can be operated on successfully and what amount of risk they assume.

With these questions in mind we have undertaken a study of 314 consecutive patients with a view of determining the incidence, type and severity of cardiovascular lesions and their effect on operability, morbidity and mortality. Multiple resections were carried out to a total of four hundred and four resections. This was done because of unusually large glands, recurring carcinoma and the belief that in some of the cases of bad cardiovascular disease multiple short resections were safer.

We have been interested in this subject for some time. In a previous study by one of us¹ patients with heart disease in all phases of general surgery were studied to determine the effects of various types of heart disease on the surgical risk. At a later date one of us² undertook several studies to determine the incidence of cardiovascular disease in prostatic obstruction and the value of the electrocardiogram in these cases.

Many men in the older age groups have known cardiovascular disease. In many others, however, no symptoms referable to the cardiovascular system had been noted by the patient. In all our cases every attempt was made to make an accurate evaluation of the circulatory system from a study of the history.

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Read before the Section on Urology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

1. Butler, S.; Feehey, N., and Levine, S. A.: The Patient with Heart Disease as a Surgical Risk, *J. A. M. A.* 95: 85 (July 12) 1930.

2. Bacon, C. M., Kretschmer, H. L., and Woodruff, L.: Electrocardiographic Studies in Prostatic Obstruction: A Preliminary Report, *J. Urol.* 25: 335 (March) 1931. Kretschmer, H. L.: Prostatic Obstruction: Electrocardiographic Study of Three Hundred and Twenty-One Cases; a Further Report, *J. A. M. A.* 97: 1221 (Oct. 24) 1931.

15. Freund, J., and Bonanto, M. V.: The Effect of Paraffin Oil, Lanolin-like Substances and Killed Tubercle Bacilli on Immunization with Diphtheria Toxoid and Bact. Typhosum, *J. Immunol.* 48: 325-334 (May) 1944.

16. Friedewald, W. F.: Adjuvants in Immunization with Influenza Virus Vaccines, *J. Exper. Med.* 80: 477-493 (Dec.) 1944.

17. Henle, W.; Henle, G.; Hampil, B.; Maris, E. P., and Stokes, J., Jr.: Experiments on Vaccination of Human Beings Against Epidemic Influenza, *J. Immunol.* 53: 75-93 (May) 1946.

18. Salk, J. E.; Menke, W. J., and Francis, T., Jr.: Identification of Influenza Virus Type A in Current Outbreak of Respiratory Disease, *J. A. M. A.* 124: 93 (Jan. 8) 1944.

physical examination and electrocardiogram. Although the electrocardiograms over the years have been read by several different persons, they have all been reappraised by one of us for the sake of uniformity. For the same reason the histories and physical examinations have all been carefully reviewed.

No patient was refused resection irrespective of the size of the gland or because of the cardiac condition, although surgical treatment was often delayed or modified because of the condition of the heart. No suprapubic or perineal prostatectomies were done.

THE INCIDENCE OF CARDIOVASCULAR DISEASE

The study of this series of 314 consecutive cases reveals that there were 112 patients, or 35.66 per cent, who showed evidence of heart disease, either clinically on physical examination or in the electrocardiogram. Many had more than one cardiac lesion (tables 1 and 2). Nineteen patients were in congestive heart failure when admitted to the hospital. With proper

TABLE 1.—*Clinical Heart Disease Found on Physical Examination*

	Number of Cases
Heart enlarged more than 2 cm. to the left.....	45
Heart enlarged to right.....	3
Hypertensive cardiovascular disease.....	35
Cardiovascular renal disease.....	2
Valvular lesions:	
Mitral insufficiency.....	32
Aortic insufficiency.....	8
Mitral stenosis.....	9
Aortic stenosis.....	8
Aortic stenosis and mitral insufficiency.....	3
General passive congestion.....	19

TABLE 2.—*Major Electrocardiographic Observations*

	Number of Cases
Changes in coronary artery, old.....	37
Changes in coronary artery, active.....	7
Heart	
Bundle branch block.....	4
Prolonged auriculoventricular conduction.....	15
Complete auriculoventricular block.....	3
Intraventricular block (QRS more than 0.12 second).....	9
Important irregularities:	
Ventricular extrasystoles.....	15
Auricular fibrillation.....	12
Auricular flutter.....	1

cardiac management they were treated by transurethral resection; they made uneventful recoveries.

There were 45 whose hearts were enlarged more than 2 cm. to the left and 3 patients with demonstrable enlargement to the right. There were 35 patients with hypertensive cardiovascular disease and 2 with cardiovascular renal disease. Eight patients had aortic insufficiency and 8 aortic stenosis. Nine showed mitral stenosis and 39 had mitral insufficiency. Three had aortic stenosis with mitral insufficiency.

HISTORY OF ANGINA

There were 12 patients who gave a definite history of having had previous attacks of angina. Among these was 1 man who stated that he had 1,100 attacks of angina pectoris, for which reason he had been advised elsewhere that he could not be relieved of his prostatic obstruction. This advice was given despite the fact that urinary distress precipitated an anginal attack. His anginal attacks were greatly reduced in both number and severity after two transurethral resections. His postoperative course was uneventful.

There were 9 patients with a history of previous attacks of coronary occlusion with electrocardiographic confirmation in this group.

BLOOD PRESSURE STUDIES

There can be no doubt that abnormally low or high blood pressure adds to the surgical risk. This has been recognized for a long time; hence the importance of

TABLE 3.—*Blood Pressure Records*

Systolic	Cases	Diastolic	Cases
Under 100.....	9	Under 90.....	232
101-120.....	31	91-110.....	55
121-150.....	157	Over 111.....	22
151-175.....	65		
176-200.....	30		
Over 201.....	17		

careful studies on the blood pressure of the patient with prostatic obstruction. In some of the patients with severe infection and with a large amount of residual urine who have hypertension there is decided reduction in the elevated blood pressure after preliminary treatment with the indwelling catheter or by suprapubic cystostomy. This has been recognized by urologists for many years.

The results of the blood pressure studies are presented in table 3. There can be no question of the fact that the 9 patients whose systolic pressure was below 100 can be classified as having hypotension or that the 47 with systolic pressure over 175 have real hypertension.

There were 22 who had systolic pressures over 200 and diastolic pressures over 100.

THE ELECTROCARDIOGRAM

Should the electrocardiogram be used as a routine procedure in the patient with prostatic obstruction? The answer to this question depends on the following propositions: 1. Does it reveal lesions that cannot be recognized by the history and the physical examination? 2. Does it give any information in addition to that obtained from a careful history and physical examination?

A review of the electrocardiograms disclosed 37 patients with evidence of ancient or healed disease of the coronary arteries; there were 7 with active coronary

TABLE 4.—*Summary of Heart Disease According to Severity*

	Number of Cases
Organic heart disease an added risk.....	73
Organic heart disease not an added risk.....	69
Total organic heart disease.....	112
"Normal hearts"—disease found by electrocardiogram only.....	83
Heart blocks found by electrocardiogram only.....	10

occlusion at the time of admission to the hospital. None of the latter were among those with a history of coronary occlusion.

There were 33 cases in which no heart disease had been diagnosed by the history or the physical examination but in which the electrocardiogram revealed evidence of important pathologic changes.

There were 31 patients with disturbances of conduction. These were divided among 4 with bundle branch block, 9 with prolonged interventricular conduction

and 18 with some type of auriculoventricular block, of whom 3 had complete heart block. Twelve cases of auricular fibrillation and 1 of auricular flutter were found; 15 patients had premature ventricular contractions. One instance of dextrocardia was found.

It is interesting to note that of the 31 cases of impaired conduction, 10, including a complete heart block, were not diagnosed except by electrocardiogram.

In view of the fact that in this series of 314 cases there were 112 (35.66 per cent) which showed evidence of heart disease either clinically or in the electrocardiogram, we have considered each case as it presents its individual problem to the surgeon and internist as to whether the cardiovascular disease is a factor. This concerns not only the risk involved in the operation, but also choosing the right time for the operation; that is, whether the resection should be delayed until the circulatory system has been brought to its optimum efficiency. We have considered that in 39 of these cases, while there was evidence of heart disease such

a colostomy it was decided to do a resection, from which he made a complete recovery. On the sixteenth day after resection complete suppression of urine developed. At necropsy both ureters were found completely occluded by metastatic carcinoma.

There were 2 deaths due to aspiration of stomach contents into the lungs, a clinical entity overlooked for many years and recently brought to light by Irons and Apfelmach.

The sixth death was that of a physician. He was an extremely difficult patient who insisted on removing his catheter at will and reinserting it while in bed. This resulted in severe urinary infection with secondary hemorrhage, septic manifestations and terminal pneumonia.

SUMMARY AND CONCLUSIONS

The prognosis as concerns the cardiac patient with prostatic obstruction is good, provided the condition is recognized before operation and proper treatment is instituted. No patient, cardiac or otherwise, has been denied relief of his obstruction. The low mortality and relief of their condition has been made possible for the following reasons: (1) careful preliminary study and treatment of the cardiac condition; (2) the fact that transurethral resection is a less formidable procedure than suprapubic or perineal prostatectomy; (3) the use of modern methods of anesthesia; (4) the use of blood transfusions, and (5) the possibility of getting these patients out of bed the next day after operation when this may be necessary.

ABSTRACT OF DISCUSSION

DR. HAROLD C. HABEIN, Rochester, Minn.: Transurethral prostatic resection can be carried out by the well-trained surgeon with minimal insult to the cardiovascular system. This is borne out by Dr. Kretschmer's report of only one death referable to cardiac failure in his series. There is little question that either suprapubic or perineal prostatectomy in the same group of patients would have been accompanied by a mortality rate of from three to ten times that which Dr. Kretschmer reported. Evidences of marked cardiac decompensation are not hard to recognize; it is the minimal decompensation that is often overlooked. Provided this is recognized, it usually is very easy to establish cardiac compensation. Often drainage of the bladder and rest are all that is required. Electrocardiographic studies are valuable and should be a part of the routine examination of patients in the older age groups. If there is no history of cardiac impairment and no physical signs of decompensation, these patients can be operated on with a high degree of safety. Probably the most important findings derived from electrocardiographic studies are those changes associated with acute myocardial infarction. Operation in the presence of recent coronary thrombosis is extremely hazardous; hence, surgical treatment should be postponed, if at all possible, for six to eight weeks or longer. The most difficult evaluation of surgical risk arises when the patient is suffering from angina pectoris secondary to coronary sclerosis. As Dr. Kretschmer has pointed out, most patients with angina pectoris will undergo transurethral surgery without serious difficulties. But many times, in our experience, patients with severe angina pectoris will withstand transurethral resection without difficulty, whereas those patients who have had only mild angina pectoris will experience the most difficulty. We have had the experience of having coronary thrombosis develop, during or after surgical treatment, among patients who have never had symptoms of angina pectoris. I was surprised at the large number of patients with mitral insufficiency which was reported. In my experience, practically every patient with mitral insufficiency has had a certain degree of mitral stenosis. I believe that every patient with rheumatic endocarditis should have the benefit of preopera-

TABLE 5.—Analysis of Deaths

Name	Age	Diagnosis	Cause of Death	Comment
S.	67	Benign hypertrophy; sarcoma of clavicle	Coronary thrombosis	Angina for many years; edema of ankles; died on 10th postoperative day
H.	75	Benign hypertrophy	Pulmonary embolism	Died on 15th postoperative day while walking around the room
F.	59	Median bar	Uremia	Died of 21st postoperative day; resection of rectum for carcinoma 18 mo. before; autopsy: both ureters occluded by metastatic carcinoma
Dr. S.	73	Benign hypertrophy; severe paralysis agitans	Aspiration pneumonia	Died on 9th postoperative day during severe attack of vomiting; autopsy: lungs filled with aspirated stomach contents
R.	73	Benign hypertrophy	Aspiration pneumonia	Died on table before operation was completed; autopsy: lungs filled with aspirated stomach contents
Dr. H.	72	Benign hypertrophy	Secondary hemorrhage; sepsis; pneumonia	Patient a physician hard to manage, kept removing and reinserting catheter, causing infection, secondary hemorrhage and sepsis

as hypertrophy or mitral insufficiency, the heart disease was not of such severity as to be an important factor. There remain 73 cases in which the heart or circulation was a real factor in operative risk (table 4).

MORTALITY

There were 6 deaths in this series of 314 patients, or a mortality of 1.9 per cent. On the basis of 404 resections the mortality was 1.4 per cent. The deaths are presented in table 5.

In spite of the fact that there were so many serious cardiac conditions in this series there was only 1 death due to heart disease. This occurred on the tenth day after resection, the day scheduled for the patient's discharge from the hospital, and was due to coronary thrombosis. The second death, from pulmonary embolism, occurred on the fifteenth postoperative day, the day scheduled for the patient's discharge from the hospital. The third death occurred in a patient who one and one-half years before admission to the hospital had had a combined abdominal-perineal resection for extensive carcinoma of the rectum. He entered the hospital with complete retention. He could not tolerate an indwelling catheter. In view of the fact that he had

tive and postoperative chemotherapy or treatment with antibiotics as a prophylactic measure. In the case of the patient with infection of the urinary tract, the organism responsible should be cultured and its sensitivity to penicillin or streptomycin should be used. The appropriate drug should be administered at least three days preoperatively and as long postoperatively as there are evidences of acute infection.

DR. THOMAS A. MORRISSEY, New York: I am certain that Dr. Kretschmer's figures may be fairly closely approximated by numerous other operators and clinics throughout the country. The urologist must make up his mind as to which is more important, the prostatic obstruction or the heart disease. The normal incidents of prostatic obstruction are bound to accentuate a latent cardiac pathologic condition by their associated symptoms—changes in blood pressure and blood nitrogen, frequency, principally nocturia, and interrupted sleep, residual urine with or without infection—so that the relief of the obstruction is indicated as a means rather than an end to the alleviation of the associated cardiac pathologic condition and the increased heart load. Urologists in New York City who do numerous perineal prostatectomies point out the cardiac strain of the operative posture on patients with cardiac impairment. The so-called exaggerated lithotomy position must be considered in the selection of the type of operation. Dr. Kretschmer acknowledges this by his recognition of the need for multiple resections in cases in which a considerable time is occupied with bleeding, etc., in a difficult resection. The anesthesia problem cannot be overemphasized. Low spinal block with exacting attention to level of anesthesia is important in obtaining satisfactory results. However, the anesthetic agents and techniques used are not as important as the judgment, skill and experience of the anesthesiologist. Complications which meant increased heart load are now less of a problem. Sulfonamide drugs, penicillin and ligation of the vas have all been instrumental in elevating the safety of all procedures. Levine has reported a series of over 400 patients with organic heart disease who had been subjected to various types of prostatic surgery. These showed an unexpected mortality of 6.4 per cent. He found that the postoperative complications were the same in the cases involving cardiac disease as in the noncardiac cases. This phase of prostatic surgery cannot be overemphasized. Over ten years ago Dr. Kretschmer emphasized the importance of stabilizing patients with cardiovascular disease who showed electrocardiographic changes with hypertension before operation. The low mortality which he reports in his present series is noteworthy and undoubtedly the result of careful supervision and the application of the principles which he sets forth in the management of these cases.

DR. A. E. GOLDSTEIN, Baltimore: Dr. Kretschmer has called to our attention many of the cardiac conditions that are encountered in the series of cases in which he has operated. All our patients with prostatic disease have some cardiac abnormality. I do not believe that we have ever refused an operative procedure because of a cardiac condition. I am certain that it was not Dr. Kretschmer's intention to convey the idea that the transurethral operative procedure is the only operation that should be performed on patients with cardiac disease. He says that it is a less formidable operation. In my hands it is not so. I, and many other men, can perform perineal prostatectomies in less time with less damage to the patient than the transurethral operation causes. Likewise, I am certain there are many men in this audience who can do a suprapubic operation probably with less damage and less trauma than when they do a transurethral. When he speaks of mortality of 1.9, which is certainly low in comparison with that of a recent report given out by us—252 cases with a mortality of 3.9 per cent—quite true, twice as much—the difference is not of sufficient importance to put into my hands just the transurethral operative procedures for cardiac conditions. We should remember that Dr. Kretschmer is a very able surgeon. He has mastered the transurethral operative procedure, but what about the surgeon in the small country town who is performing transurethral operations, the man who has had little experience? He seems to be able to handle the suprapubic operation much better with

certainly a lower mortality than with the transurethral. In our recent series no one died from a cardiac condition. I would not like this audience to go away from here thinking that the only type of operative procedure to be employed in cardiac conditions is the transurethral. Again I repeat, I am certain that it was not Dr. Kretschmer's thought. Dr. Kretschmer recently visited Baltimore and was at one of our clinics. He saw the perineal operative procedures performed and observed that each patient did not remain on the table over half an hour, which I think is as little time as one can expect to perform any prostatic operative procedure. As to getting patients who have undergone transurethral operations out of bed the first day, we get all our patients on whom the perineal operation has been done out of bed on the first day.

DR. HERMAN L. KRETSCHMER, Chicago: Dr. Habein stressed the importance of obtaining a careful and detailed history in this group of patients. I agree wholeheartedly. In this day of mechanization in medicine, the taking of the history seems to be rapidly becoming a lost art. His point emphasizing just how much work the heart can do on exertion is timely. And, as he stated, it gives one a good idea of just what a heart can do. Dr. Habein called attention to the fact that great care must be used in the administration of fluids. With this I agree. The administration of fluids has become so routine, without consideration of the patient's condition, that cardiac embarrassment has resulted from the routine administration of large amounts of fluids. In answer to Dr. Habein's question on malignant endocarditis, I have had 1 case following transurethral resection. The importance of maintaining blood pressure was mentioned by Dr. Habein. Of course I agree with him in this statement. My experience tallies with his that since the days of resection we too see fewer and fewer cases of pulmonary embolism. Dr. Morrissey's remarks about the increase of heart disease are timely. We are an aging nation. There are more older persons living in this country today than ever before. As a result there has been a definite increase in the number of persons with cardiac disease. In reply to his question about the difference in mortality between suprapubic prostatectomy and resection, may I state that in my experience the mortality and morbidity are much lower with resection. In answer to his question about studies on blood chemistry may I say that they were made and tabulated in our studies but had no bearing on the results and so were not mentioned. Dr. McCarthy called attention to the fact that there are still some differences of opinion on resections versus open prostatectomy. There will always be differences of opinion on surgical procedures, but as time goes on these differences become less and less. I wish to agree with Dr. Goldstein's statement that a man should do the type of operation that he is best qualified to do. The object of the paper was not to make a plea for resection but to present the incidence and extent of heart disease in an unselected series of cases of prostatic obstruction, and to determine the effect of heart disease on mortality.

Myasthenia Gravis.—It seems that by 1927 the clinical concept of myasthenia gravis embodied all important aspects of the present day clinical concept except for the clinically demonstrable effects of certain pharmacologic agents, particularly neostigmine, quinine and curare. The story of this important development begins with the discovery by Harriet Edgeworth of the first effective treatment for myasthenia gravis; that is, ephedrine. Dr. Edgeworth herself was probably the first subject of a therapeutic test for myasthenia gravis. Soon after her announcement of the effectiveness of ephedrine in her case, she submitted to studies at the University of Minnesota. . . . In 1935, Viets and Schwab advocated the use of neostigmine as a therapeutic test for myasthenia gravis. In my opinion, the contention of these authors that the marked strengthening effect of neostigmine in cases of myasthenia gravis is one of the fundamental characteristics of the disease has stood the test of time in spite of occasional protests to the contrary.—Eaton, L. M.: *The Clinical Concept of Myasthenia Gravis, Proceedings of the Staff Meetings of the Mayo Clinic*, Jan. 7, 1948.

TREATMENT OF SLIPPED CAPITAL
FEMORAL EPIPHYSIS

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The treatment of epiphysiolysis or slipped capital femoral epiphysis at the Massachusetts General Hospital, since our report in 1943, has been standardized in conformity with our conclusions reported then.¹ Patients with pronounced slipping of the epiphysis have been treated by arthrotomy, reposition of the displaced epiphysis on the neck and fixation by means of a three-flanged nail. Patients with only a minimal slipping of the epiphysis have been treated by lateral nailing in situ, without arthrotomy and without correction of the early deformity.

Any child 9 to 16 years of age, who complains of limp and/or pain in the region of the hip, anterior part of the thigh or the knee is suspected of having a slipped epiphysis. Examination may reveal that he walks with the involved limb in external rotation. On flexion of the hip, this external rotation may be increased or there may be only a slight limitation of internal rotation.

The diagnosis is made from anteroposterior and lateral roentgen views of the hip. The degree of involvement is determined by the distance that the head has slipped from the superior outline of the femoral neck. If this distance (line BC in figures 1 and 2) is 1 cm. or more, the slip is considered pronounced, requiring replacement of the head to its anatomic position. If, however, the slip is less than 1 cm., it is considered minimal and necessitates no alteration of the existing relationship of the femoral head and neck. With all cases of suspected slipping, the lateral roentgen view is the essential and in some cases the only means of determining the amount of slipping present.

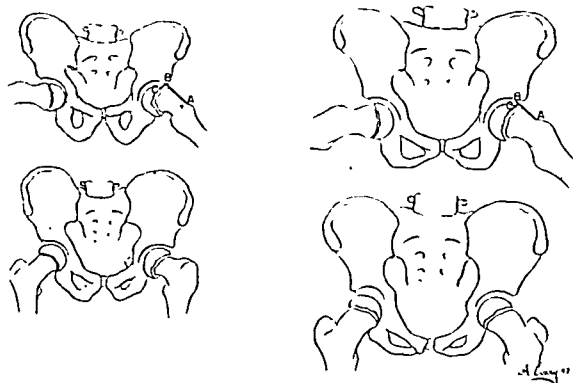


Fig. 1.—The upper figures are lateral views, the lower anteroposterior views. Line AB is the superior border of the femoral neck projected. Line BC is the distance from the femoral head to the projection of the superior border of the femoral neck—the distance that the head has slipped.

We are now reporting a survey of 45 patients who had 51 slipped capital femoral epiphyses. Nineteen of these 51 cases were reported previously, in 1943. The

remainder, 32 hips, have been admitted for treatment since January 1943. Of the 19 cases previously reported, only 10 can be analyzed here, for these were the only ones in which treatment was with the three-flanged nail. They have been followed for five to thirteen years. One patient had both hips and four others had single hips nailed in situ, and 4 had an arthrotomy and nailing of the involved hips because the slip amounted to more than 1 cm. Thus, there were

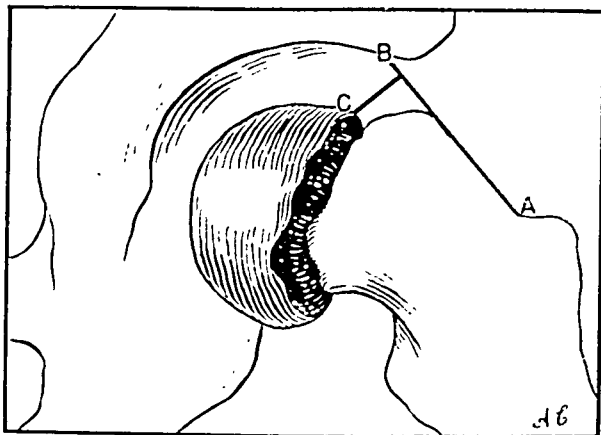


Fig. 2.—Close-up view of abnormal hip (lateral view).

6 cases, or 60 per cent, detected early enough for the hips to be nailed in situ. Four, or 40 per cent, required open reduction before the nailing.

The number of cases admitted annually has been more than doubled since our last report. Obviously, the men in the dispensary are keener to detect a slip of the epiphysis. Nineteen cases were admitted in the five years 1938 through 1942, but there were 32 cases admitted in the last three years. Only 28 patients were treated in this period, however, because 4 had bilateral involvement; i. e., about 15 per cent after admission for a slip of one epiphysis had a slip of the second seven and one-half to twenty-eight months later. This 15 per cent is a drop of 6 per cent from the 21 per cent reported in 1943 for the incidence of contralateral involvement.

Of the 32 cases reported since 1943, in 20 the hips were nailed in situ and in 12 after arthrotomy. Thus, about 62 per cent were recognized early enough for the hips to be nailed in situ, while about 38 per cent required preliminary arthrotomy and reduction. Since these percentages are the same as for the cases reported in 1943, it is evident that though we are detecting more cases of slipped capital femoral epiphyses, we are not seeing them early enough to avoid open operation.

Generally speaking, three types of patients are seen at our clinic: those with a past history of no complaints referable to the hip, but with a definite history of recent trauma suddenly followed by a disabled hip joint; those with a history of gradual onset but with increasing and continuing disability at the hip, and, finally, those with a history of recurrent periods of disability alternating with periods of quiescence and presenting cardinal signs of a slipped epiphysis.

There were only 3 cases in the first group of acute slipping. These patients were treated by manipulation, cautiously slow and extremely gentle. The affected hip was reduced by being brought slowly into flexion with traction, internal rotation and finally extension in

Read before the Section on Orthopedic Surgery at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

1. Klein, A.; Joplin, R. J., and Reidy, J. A.: Treatment in Cases of Slipped Capital Femoral Epiphysis at Massachusetts General Hospital, *Arch. Surg.* 46: 681-686 (May) 1943.

abduction. When the reduction was verified by anteroposterior and lateral roentgenograms, the epiphysis was nailed in situ. It should be stressed emphatically, however, that the manipulation must be exceedingly gentle so as to avoid trauma to the surfaces of the joint and consequent traumatic arthritis. If the reduc-



Fig. 3 (J. M.).—Minimal slip of the femoral head on the left, anteroposterior view.

tion cannot be accomplished by only the gentlest manipulation, with the patient under general anesthesia, an arthrotomy for reduction is indicated.

The second group consisted of most of the children whose duration of complaints and whose physical examination indicated the probability of a slow gradual slip, perhaps minimal in amount. These children suspected of having slipped epiphyses were not allowed to stand or walk. They were examined roentgenologically and, on confirmation of the diagnosis, were hospitalized for operation as soon as possible. Such cautious treat-



Fig. 4 (J. M.).—Minimal slip of the femoral head on the left, lateral view. The slip is more apparent in the lateral than in the anteroposterior view. (fig. 3).

ment must be used to avoid further slip, which has occurred in patients treated in the past with plaster spica, splints or even bed rest. These patients with a minimal slip had it nailed under general anesthesia through a lateral incision as for a fracture of the femoral neck.

The third group, those with complaints which were gradual in onset, intermittent and of rather long duration, had pronounced displacement.

After the degree of slip had been determined by roentgen examination, the hip joint was exposed by the Smith-Petersen intrapelvic approach.² The femoral neck was separated from the epiphysis at the epiphysal plate with a curved osteotome or a properly curved hip gouge.

SITE OF OSTEOTOMY FOR REDUCTION OF SLIP

The gouge was kept in place, once the osteotomy was complete, to immobilize the epiphysis and also to serve as a skid on which to manipulate the femoral neck into place. This was accomplished by traction in flexion, internal rotation and, finally, abduction and extension of the femur. As the neck glided down into its corrected position, under visual control of the operator, the gouge was withdrawn from the epiphysal region.

If roentgenograms confirmed correction of the slip in both its anteroposterior and lateral planes, then through

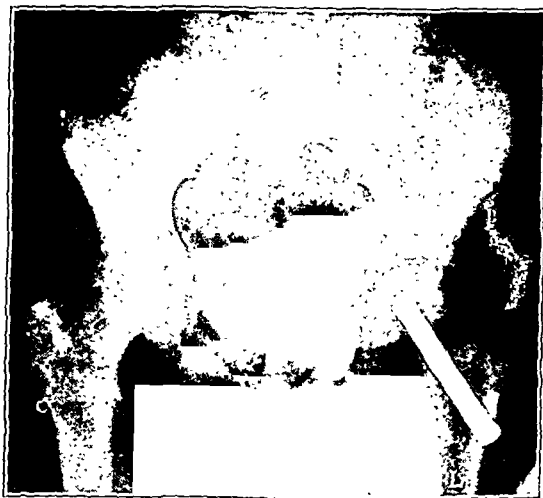


Fig. 5 (J. M.).—Anteroposterior view after nailing in situ.

a separate lateral incision the hip was nailed as for a fracture of the femoral neck.

When the operation was completed, the patient was returned to bed for traction. Buck's extension with a 5 pound (2.3 Kg.) weight was maintained for seven to ten days for the cases of fixation in situ by nailing. In the cases of open reduction balanced traction was used for ten to twelve days or until the sutures were removed. Two weeks after operation, the patients were given crutches and taught to use them correctly. Plaster spicas for postoperative use have been discarded because an analysis of earlier cases in which treatment was given at this hospital by such means has shown a distinct tendency toward stiffened hips. Non-weight-bearing splints had been used for the hips operated on in conjunction with a high sole under the sound lower limb. This method was also discarded because any such brace produced some excessive strain on the hip joint so protected. Finally, the high sole likewise adds strain to the sound hip joint. Patients complained of pain in the sound hip and limped until the high sole was removed. With the possibility of a slip in the

2. Smith-Petersen, M. N.: Arthroplasty of the Hip: New Method. *J. Bone & Joint Surg.* 21: 269-288 (April) 1939.

contralateral hip always in mind, it was logical to give up splints and high soles for crutches alone. A comparative analysis of the records of 6 patients treated with splints and high soles, 5 patients treated with crutches and high soles and 4 patients treated only with crutches showed that there apparently was no harm from the use of crutches alone. The average indexes of motion and of function were fully as good for patients using crutches alone as with any other method, but definitely better than when a splint was used. The use of crutches was therefore advised for the first three months of convalescence.

During this period of convalescence, the child is returned to his normal environment as soon as possible. He may expect to return to school or work after an average postoperative period of thirty-nine days if the epiphysis has been nailed in situ and within three months if the slip has required open reduction.

Patients were examined periodically throughout their convalescence. It was soon obvious that with the clinical type of patient, especially the boys, the admonition to use crutches for three months was not always respected. Nevertheless, it was most gratifying to note the gradual relief of all complaints and the progressive increase in function of the affected hip.



Fig. 6 (J. M.).—Lateral view after nailing in situ.

Both hips, the normal and the one operated on, were examined and appraised as to function. This is the only way to detect any possible slip in the other hip, and by comparison, with the normal hip to note improvement in the one operated on. As in our previous report,¹ function

of the hip was appraised by designating a factor for each motion according to its importance. The amount of demonstrable motion is multiplied by this factor to give a product for that particular motion. The sum of these products represents the "index of motion."³ An example of the use of the index of motion in a specific case follows:

	Motion, Degrees	Factor	Product
Flexion.....	145	0.4	58
Abduction.....	45	0.4	18
Adduction.....	30	0.2	6
Rotation			
Internal.....	30	0.2	6
External.....	60	0.1	6
Extension.....	10	0.1	1
			95

On this basis, the index of hip motion was then computed for the affected hip as compared with the sound hip. Since such an index of motion does not include pain or limp, we assigned equal value to the index of motion, absence of pain and absence of limp, calling

the average of these the percentage of true normal function of the hip.

The results of treatment with nailing in situ of the early slip of less than 1 cm. are analyzed in table 1. There were 31 patients, 4 with bilateral involvement. This entire group of 35 hips was followed for an aver-



Fig. 7 (P. A.).—Pronounced slip of the femoral head on the left, anteroposterior view.

age period of thirty-two months. They showed, on an average, slightly over $\frac{1}{8}$ inch (0.32 cm.) shortening on the nailed side. Their average index of motion was 90 per cent of normal. Only 1 patient had any pain and this was of minor degree, and none had any limp. Their average percentage of normal hip function was 96. Six of this entire group had been reported in 1943 after they had been followed for an average period of fifteen months.

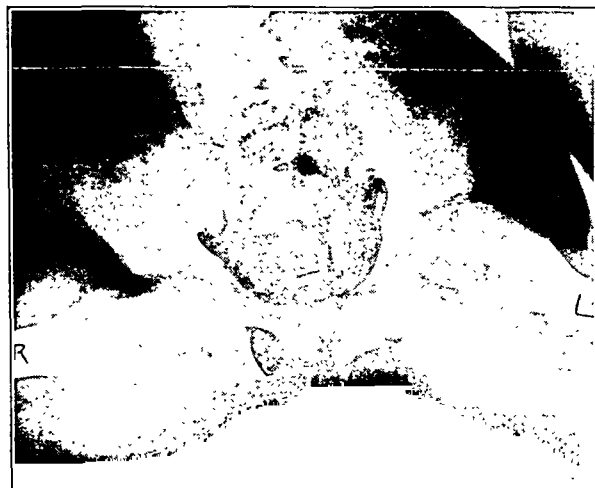


Fig. 8 (P. A.).—Pronounced slip of the femoral head on the left, lateral view.

They have now been reexamined after having been followed for an average period of sixty-five months. At the first report their average index of motion was 82 per cent and their average percentage of normal hip function was 94. Now they show a definite improvement to an average index of motion of 92 per cent and to 96 per cent of normal function (table 2).

3. Ferguson, A. B., and Howorth, M. B.: Slipping of Upper Femoral Epiphysis: Study of Seventy Cases, J. A. M. A. 97: 1867-1872 (Dec. 19) 1931.

Table 3 represents the data on 16 patients with pronounced slipping. They were treated with arthrotomy, osteotomy through the epiphysal plate, replacement of the head to its anatomic position on the neck and lateral nailing of the fragments as described previously. This whole group was followed for an average period



Fig. 9 (P. A.).—Anteroposterior view after osteotomy at the epiphysal line, replacement of the femoral head to its anatomic position on the femoral neck and nailing with a three-flanged nail.

of thirty-three and one-half months. They showed an average shortening of slightly more than $\frac{1}{4}$ inch (0.64 cm.) on the side operated on. Their average index of motion was 85 per cent of normal. Only 1 patient had any pain and this was of minor degree, and only 1 patient limped. Their average percentage of normal hip function was 92.

It is interesting to compare these figures with those reported in 1943 for a comparable group of patients with pronounced slipping and treated likewise by arthrotomy, osteotomy and nailing. In 1943, the average



Fig. 10 (P. A.).—Lateral view after osteotomy at the epiphysal line, replacement of the femoral head to its anatomic position on the femoral neck and nailing with a three-flanged nail.

index of motion attained was approximately two thirds of normal and the average percentage of normal hip function was 76. Now, with greater experience and better convalescent care, there has been an improvement in the average index of motion from 66 to 85 per cent and in the average percentage of normal hip

function from 76 to 92. Four of this group had also been reported in 1943 after they had been followed for an average period of eighty-one months. At the first report their average index of motion was 73 per cent of normal and their average percentage of normal hip function was 79. Now they show a definite improvement from 73 per cent to 90 per cent average index of motion and from 79 to 87 per cent of normal hip function.

In a survey of the roentgenograms of the 51 cases reported,⁴ there were no signs of aseptic necrosis, and only 2 cases showed any signs of traumatic arthritis. These 2 cases were in the arthrotomy group that had an osteotomy through the epiphysal plate and replacement of the epiphysis to its anatomic position. One of these cases by roentgenogram showed signs of traumatic arthritis preceding operation, and the subsequent reaction in the joint was considered an exaggeration of the preceding status. The second case was probably the result of failure to correct the slip completely. In replacing the epiphysis, the reduction must be meticulously complete in both the anteroposterior and lateral planes as shown by roentgenograms taken during the operation and before nailing. Then only will con-

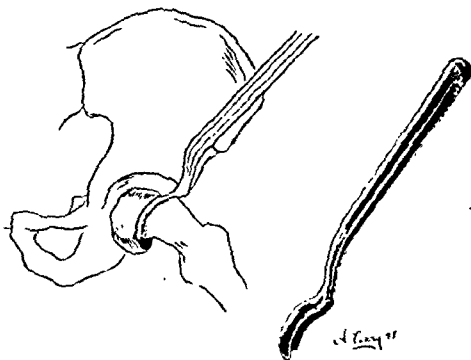


Fig. 11.—Right, hip gouge. Left, gouge following epiphysal line to separate head from neck.

gruous surfaces be in direct apposition throughout the arc of motion in that joint. If the correction of the slip is not complete, any incongruity of the opposing joint surfaces predisposes to traumatic arthritis. Thus, in the 51 cases in which nailing was done, only 2 showed any signs of traumatic arthritis by roentgenogram. One patient thirty-four months and the other eighty-one months after operation had 80 and 58 per cent, respectively, of normal hip function.

CONCLUSIONS

Patients suspected of a slip of the capital femoral epiphysis should immediately be forbidden any weight bearing on the affected limb.

Anteroposterior and especially lateral roentgenograms should be made immediately to confirm the diagnosis and to determine the extent of the slip.

The hip should be nailed as soon as possible, in situ if the slip is minimal, and after arthrotomy and reduction if the slip is pronounced. Nailing in situ is a relatively simple procedure for the surgeon who has been adequately trained. Open reduction and nailing, when required, is a difficult procedure even in the hands of

4. The survey of the roentgenograms of all our cases forms the basis of another report soon to follow in more detail.

the orthopedic surgeon, until he acquires the proficiency gained through experience.

Nailing insures the patient against further slipping of the epiphysis and accelerates fusion of the epiphysal line.

TABLE 1.—*Lateral Nailing in Situ*

Patient	Age	Months After Operation	Post-operative Shortening, Inches	Index of Motion	Pain	Limp	Total Percentage of Function
R. G.	13	12	0	100.00	100	100	100.00
C. H.	10	39	3/4	100.00	100	100	97.00
M. G. (R)	12	39	3/4	96.90	100	100	98.00
D. R. (L)	13	48	3/4	75.00	100	100	91.00
D. R. (R)	15	39	0	72.00	100	100	90.00
M. S.	12	48	5/8	91.50	100	100	97.10
E. T. (L)	13	13	0	89.70	100	100	93.50
E. T. (R)	12	25	3/4	89.70	100	100	93.50
J. M.	9	25	0	100.00	100	100	100.00
G. L.	13	84	0	96.90	100	100	98.00
J. D. McM.	16	70	0	93.90	90	100	94.00
M. H.	15	63	5/8	93.90	100	100	97.00
A. W., Jr.	13	61	0	86.91	100	100	95.63
R. F. (L)	13	60	0	95.88	100	100	98.00
R. F. (R)	14	53	0	87.90	100	100	95.90
G. N. (R)	12	48	0	82.00	100	100	91.00
G. N. (L)	15	20	0	83.00	100	100	91.50
R. S.	11	40	0	100.00	100	100	100.00
R. C.	14	35	1/2	78.50	100	100	92.99
C. F.	12	31	0	100.00	100	100	100.00
J. A.	15	28	1/2	64.98	100	100	88.52
J. S.	14	27	0	94.98	100	100	98.30
A. C.	12	27	0	91.98	100	100	97.30
A. K.	14	24	3/4	99.00	100	100	99.00
H. B.	12	22	5/8	94.98	100	100	98.30
F. R.	13	20	0	90.00	100	100	96.65
J. M.	11	16	0	90.00	100	100	96.93
R. G.	14	15	0	79.98	100	100	93.30
J. C.	12	12	0	100.00	100	100	100.00
J. D'A.	11	11	0	94.80	100	100	98.30
R. D.	14	11	0	95.00	100	100	98.30
S. S.	10	7	0	94.98	100	100	98.30
J. D.	13	8	0	93.99	100	100	97.00
J. O'R.	12	11	0	100.00	100	100	100.00
N. H.	13	49	0	91.71	100	100	97.23
Average	12+	32.4	1/4+	90.49	99.71	100	96.70

Follow-up period: 7 months to 7 years.
Shortening: 0 to 3/4 inches.

Early postoperative mobilization is fostered by Buck's extension for the cases of nailing in situ and balanced traction for the cases of open reduction. Mobilization is further promoted by encouraging walking with the aid of crutches as early as two weeks after operation.

Slip of the contralateral hip should be detected early by periodic examinations continued until the epiphysis has fused.

TABLE 2.—*Lateral Nailing in Situ, Second Report*

Patient	Age	Months After Operation		Index of Motion		Pain		Limp		Total Percentage of Function	
		1942	1946	1942	1946	1942	1946	1942	1946	1942	1946
G. L.	13	18	86	96.9	96.90	100	100	100	100	98.90	98.90
J. D. McM.	16	15	70	71.1	93.90	100	90	100	100	90.30	94.60
M. H.	15	20	63	97.5	93.90	100	100	100	100	99.10	97.90
A. W., Jr.	13	29	61	64.5	86.91	100	100	100	100	88.10	95.63
R. F. (L)	13	12	60	94.2	95.88	100	100	100	100	97.00	98.60
(R)	14	5	53	72.3	87.90	100	100	100	100	90.70	95.90
Average	14	16 1/2	65	82.75	92.56	100	98	100	100	94.01	96.92

Manipulation is permissible only in the recent, acute slip.

With hips nailed in situ one can expect 90 per cent normal motion and 96 per cent normal hip function. Those nailed after arthrotomy and replacement will give 85 per cent normal motion and 92 per cent normal hip function. These figures obtain for observation

periods of approximately three years, but are better with longer follow-up.

Traumatic arthritis follows inadequate replacement of the epiphysis.

Aseptic necrosis was not manifest in any case.

Convalescent care of patients with open reduction is practically the same as for those nailed in situ.

The child treated by the nailing method is not kept out of his normal environment for any inordinately long period of time.

To correct a pronounced slip, osteotomy at the epiphysal plate gives a better result than one performed at any other site.

TABLE 3.—*Arthrotomy, Reduction and Lateral Nailing*

Patient	Age	Months After Operation	Post-operative Shortening, Inches	Index of Motion	Pain	Limp	Total Percentage of Function
C. G.	12	156	5/8	95.88	100	100	95.50
L. St. G.	11	68	1/4	94.05	90	100	94.68
S. P.	14	57	7/8	96.90	100	100	95.64
R. W.	15	43	1 1/4	74.15	100	0	58.05
E. L.	12	28	3/4	79.08	100	100	93.30
J. A.	15	34	0	42.00	100	100	80.06
F. H.	13	24	0	95.97	100	100	98.60
R. G.	13	23	5/8	82.08	100	100	94.20
G. G.	14	19	1/4	77.97	100	100	92.60
R. P.	13	15	0	97.93	100	100	99.30
M. W.	12	13	0	100.00	100	100	100.00
W. R.	15	13	0	90.90	100	100	96.90
P. A.	14	12	1/4	90.90	100	100	96.90
S. G.	13	12	0	86.00	100	100	94.38
A. C.	13	11	0	78.99	100	100	92.90
J. S.	12	8	3/4	87.90	100	100	95.90
Average	13	33 1/2	5/16	85.78	99.37	93.75	92.86

Follow-up: 8 months to 13 years.
Shortening: 0 to 1 1/4 inches.

TABLE 4.—*Arthrotomy, Reduction and Lateral Nailing; Comparison of Data in 1942 and in 1946*

Patient	Age	Months After Operation		Index of Motion		Pain		Limp		Total Percentage of Function	
		1942	1946	1942	1946	1942	1946	1942	1946	1942	1946
C. J.	12	87	156	70.50	95.88	100	100	100	100	90.10	98.50
L. St. G.	11	26	68	89.88	94.05	90	90	90	100	89.60	94.68
S. P.	14	11	57	68.10	96.90	100	100	90	100	82.70	98.90
R. W.	15	9	43	66.80	74.15	100	100	0	0	55.60	58.05
Average	13	33	81	73.82	90.24	97.5	97.5	70	75	79.50	87.53

ABSTRACT OF DISCUSSION

DR. H. R. MCCARROLL, St. Louis: After listening to this report, we might imagine that the problem of the slipped femoral epiphysis is completely solved. Unfortunately, I do not believe that is true. Very few of us attempt to measure the degree to which the femoral head has slipped. There is no such thing as a fine line of distinction beyond which we can state that arthrotomy and osteotomy must universally be carried out. In deciding this, we must weigh the clinical picture as well as the roentgen manifestations. I get lost in attempting to study the statistical data of the essayists. If my analysis of their results is correct, all cases would be classified as "excellent," with but 3 exceptions, and these would be 1 good and 2 fair. These figures have not been approached in any other clinic. Since the method of treatment used by the authors has been in general use in this country for several years, it seems strange that their results should be so far superior to most others. The authors have stressed lack of postoperative immobilization and urge early ambulation with crutches. We

have occasionally encountered postoperative absorption of the femoral neck with the femoral head seemingly remaining intact. This manifestation, which must be classed as a form of aseptic necrosis, precludes any possibility of early activity for these patients; yet such a complication is not mentioned in this report. We are advised that hips with minimal slipping should always be nailed to prevent further displacement. I am still not convinced of that fact. With adequate bed rest and skin traction, many of these epiphyses will heal without further displacement and with good results. I should like to rewrite one sentence of the authors' conclusions. Their sentence reads in part as follows: "Open reduction and nailing is a difficult procedure even in the hands of the orthopedic surgeon, until he acquires the proficiency gained through experience." I should change this to read: "Open reduction, osteotomy and nailing is a difficult procedure, even in the hands of the orthopedic surgeon. Period." This operation, although indicated in many instances, is not as simple a procedure as has been depicted for us today. In my estimation, at least, it still carries considerable risk of secondary changes in the hip over which we at present have no control.

DR. TOM OUTLAND, Elizabethtown, Pa.: These results are by far the best reported, and they are so far superior that when I read this paper, I began to look around for the catch in it. If there is one here, it eluded me, even if it has not eluded Dr. McCarroll. I certainly am not rash enough to differ radically with any of the important conclusions that Dr. Klein and his associates have drawn. I do not think that the slight incongruity of the opposing joint surfaces from not quite perfect reduction is very important in the production of traumatic arthritis. The circulation of the femoral head is at best precarious, and anything that interferes with it (and that is probably the factor that results in the slipping of the epiphysis) throws it out more or less completely. If this circulation is not promptly reestablished, some permanent change is bound to occur whether it is coxa magna, so-called traumatic arthritis or frank aseptic necrosis. In other words, since the circulatory disturbance is the fact that causes the slipping, the fate of the femoral head may already be determined before it reaches the hands of the orthopedic surgeon. I have used about the same procedure for the past five years, and have a small series of cases. The only difference in the technic is that I prefer to use skeletal traction rather than even a gentle manipulative reduction. I am not sure that I could exercise the fine restraint that Dr. Klein and his group do by not using force when I am attempting to reduce any bone parts. I have felt that perhaps, rather than a rapid changing of the position of the two fragments by manipulation, the already embarrassed circulation would be less interfered with if it were done gradually by traction. I can only congratulate Dr. Klein on the excellent results he has shown, and hope that my own results in the future may approach that, although I rather doubt it.

DR. FRANK R. OBER, Boston: It is my custom to treat the type of case which Dr. Klein describes with a Thomas splint with a patten and high sole on the other side. These patients have all done exceedingly well, although there may be as much as $\frac{3}{8}$ inch (0.96 cm.) of shortening. If a diagnosis is made early and a single hip is involved, the patients do well. Of course, in a clinic there is a social problem which is a little different. Time may not mean much to children, but it does mean a lot in tying up hospital beds. Nailing slipped heads is not always an easy matter. Although the pin is driven through the neck into the head, the head may push off and rotate. In old cases of slipped femoral epiphysis, the head is dense and as hard as marble. In such cases, it would be wise to reduce the hip and then drill a hole into the head, inserting the pin. A great many of these cases result in loss of motion after the operation.

DR. HAROLD B. BOYD, Memphis, Tenn.: Dr. Klein and his colleagues have given us a good paper. Their results are superior to ours. This is probably due in part to a larger percentage of advanced cases in our series. From the standpoint of prognosis and treatment, we have divided our cases into four groups. First, complete traumatic separation of the epiphysis. These patients usually have a slipping epiphysis which is com-

pletely separated by superimposed trauma. In our experience, these completely separated epiphyses, due to acute trauma, usually undergo aseptic necrosis despite accurate surgical reduction and maintenance of the position by internal fixation. I should like to ask whether patients of this type have been included in the series reported by the authors. The second group consists of gradually slipping epiphyses in which the displacement is less than one third of the diameter of the neck of the femur. Usually the displacement of the epiphysis is less than 1 cm. These we prefer to treat by the insertion of three Knowles pins, using roentgenographic control. The hip joint is not opened. In this group, good results have been obtained and no incidence of aseptic necrosis has been seen. In group 3, the epiphysis has slipped more than one third of the diameter of the neck. In most of these patients, we have performed a cuneiform osteotomy through the neck of the femur. After removal of the wedge of bone and correction of the deformity, Knowles pins are used for internal fixation. In this group, approximately 50 per cent have had good hips; the other 50 per cent range from fair to poor and in 2 patients almost complete ankylosis resulted. We have noted aseptic necrosis of the epiphysis in a few cases in this group. In group 4 the epiphysis is united in malposition. After severe slipping of the epiphysis, there is usually an associated external rotation of the hip. In old cases of neglected bilateral slipping, the patient may walk with the thighs externally rotated 80 to 90 degrees, with a gait resembling that of Charlie Chaplin. These patients are difficult to treat. Often the best solution is a trochanteric osteotomy to correct the external rotation. In these severely deformed neglected patients, the prognosis is poor regardless of the type of treatment.

DR. CARL BADGLEY, Ann Arbor, Mich.: I have no reason to doubt the excellent results which Dr. Klein and his group have shown. I believe that they have had these excellent results. I believe that the method of treatment which they have advocated is an excellent one. I think that we are arguing about the end results in different types or stages of this lesion. I have no doubt that if we get the early case and employ internal fixation, we have done the best we can do to prevent the catastrophe of a slipped epiphysis. There is no reason why I should deny the honesty of the authors. Our results, on an average, of all of our cases are 65 per cent good functional hips. Far better statistics could be given in early cases. That includes the entire group. Some patients with bad displacements have the epiphyseal line fused. One should not attempt, in our experience, to replace the head when the epiphyseal line is fused. That is an indication for a subtrochanteric osteotomy. We also have found that a screw or the Knowles pin is much easier to employ than the nail. I do not think that it makes much difference, as long as one uses internal fixation. I wish to compliment the authors on an excellent paper.

DR. JOSEPH S. BARR, Boston: As Dr. Badgley has come to the defense of the veracity of the statistics, perhaps I do not need to say anything. Some years ago, in looking up our end results on slipped epiphyses, we were appalled by the number of poor results. The staff wished to reassess our methods of treatment, and to go along some new lines of thought. This was then made a special assignment, and placed in the hands of Dr. Klein, Dr. Joplin and Dr. Reidy. It has been a long time job. Dr. Klein and his associates have been in sole charge of this work. Each year their results are reassessed before our staff, with a frank and open discussion. Before this paper was read here, it was read before our complete staff, and it was freely and thoroughly criticized. I can assure you that these patients were seen. They were not evaluated by questionnaire. I do not know the exact numbers that were lost, but it was a very small percentage. I wish to emphasize that the open reduction and replacement is technically an extremely difficult procedure, and many of our staff freely admit that we are not nearly as well qualified to do them as the men who have the special assignment. As to the question of aseptic necrosis, there has been none recognized in this series of cases. I have seen the roentgenograms in these cases. They are available to Dr. McCarroll or any of you who wish to study them. If you pay the postage, we will send the

roentgenograms, and you can look at them yourselves. It is a small series, and when it gets to be 100 or over, we may find—and I think that probably we will find—that there will be a small percentage of aseptic necrosis. I do not believe that it will be as large as in previously reported series, in which forceful manipulations have been done and patients have been kept in plaster for long periods.

DR. H. WINNETT ORR, Lincoln, Neb.: Since Philip Wilson's paper about ten years ago on the open fixation of the head, we have done a certain number by that method. I want to emphasize that no surgeon should attempt to nail a head in this kind of a hip until he has reduced the displacement. Some of the roentgenograms shown here this morning prompt me to make that remark. If you do know how to reduce the displacement, primarily, if you know how to hold it during the operation and know how to hold it postoperatively, in about 75 per cent of the cases, no operation is necessary.

DR. JOHN A. REIDY, Boston: The osteotomy of Dr. Badgley is something that definitely should not be done unless the epiphysis is actually fixed to the head, so that there is no question of further slipping. If you can do an osteotomy and use internal fixation which will allow early motion of the hips, the results might be satisfactory. The important thing so far as our treatment is concerned is the early mobilization of these hips. The circulation may be greatly impaired by the operative procedure, but early function can help reestablish a relatively normal physiology with a satisfactory return of circulation and prevention of aseptic necrosis. Dr. Boyd's cuneiform osteotomy, in our experience, has been unsatisfactory. It is a more difficult procedure and one in which more bleeding is apt to result. I think that it interferes with the circulation to a greater degree than does the osteotomy through the epiphyseal plate. Closure of the epiphysis might be hastened by using two pins rather than the three-flanged nail. We have seen several cases in which the nailing has been complete, yet growth continued to take place from the epiphysis. In 1 or 2 cases the head grew away from the nail. These cases must be watched for further slipping as long as the epiphyseal plate remains open. Dr. Outland's roentgenograms suggest that what he has done is satisfactory, and if the slip can be reduced by this type of traction, done gently, good results should be obtained. The statistics on these cases were difficult to obtain, and we disliked using such complicated figures, but, using a modification of the method first applied by Ferguson and Howorth, we felt it was the simplest way to arrive at an accurate evaluation of the joint function. In examination of the hip a deep knee bend might indicate a very good result; yet internal rotation and abduction could be lacking. If all motions of the hip are examined and specific values given each, according to its importance, a fairly good estimation of the function can be obtained. These cases were evaluated by the three of us in this way in most instances, and in some by the whole orthopedic staff.

Occupational Therapy Needs Research.—Occupational therapy received its first trial in modern times when, toward the end of the eighteenth century, William Cullen advocated farming for mental patients and by its results directly influenced Pinel to accept and introduce occupational treatment for mental disease. Physicians in many countries soon accepted this apparently successful method, and the use of occupational therapy gradually increased until it reached a peak toward the middle of the last century, after which it steadily declined until the beginning of this century for reasons which are not too clear. . . . The intensification of occupational therapy during the second World War accounted for more than a twofold increase in its use and should lead thoughtful persons to the question, "Is occupational therapy a war therapy? Was it overpublicized to the lay public and underproven to the medical profession?" Already we can read reactions to its greatly accelerated use which are disconcerting but must be answered. . . . Here then is the first challenge—we are on trial again. To this challenge there is and can be only one answer—research.—Licht, Sidney, M.D., *Modern Trends in Occupational Therapy, Occupational Therapy and Rehabilitation*, December, 1947.

CHEMOTHERAPY OF LEPROSY

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Early in 1941 a new drug, "promin," was introduced in the treatment of leprosy at the National Leprosarium. After several months' treatment of a few patients with this drug rather decided improvement occurred in their specific leprosy lesions. In November 1943 the "promin" treatment of leprosy was first reported in the medical literature¹ and was regarded as the most encouraging experimental treatment ever undertaken at the National Leprosarium. Since then "promin" and its related sulfones, "diasone" and "promizole," have been used extensively in the treatment of leprosy with exceedingly good results.

At the Second Pan-American Leprosy Conference held in Rio de Janeiro, Brazil, in October 1946, the Subcommittee on Therapeutics took cognizance of the divergent opinions on the effect of chaulmoogra oil and its derivatives in the treatment of leprosy.² The committee advised that the efficacy of chaulmoogra oil be reevaluated. Simultaneously, it recognized the sulfone drugs as having an efficient therapeutic action in lepromatous leprosy, but felt that it was too early as yet to approve them as definite chemotherapeutic agents for this disease.

We are in a transitional period as far as the treatment of leprosy is concerned. It seems that chaulmoogra oil will gradually be abandoned as an inadequate remedy³ and that the sulfone drugs will replace chaulmoogra oil until a better treatment is evolved. It is the purpose of this paper to acquaint the members of the medical profession of this country with this new treatment and, at the same time, bring up to date our experience with the sulfone drugs and the antibiotics in leprosy.

THE SULFONE DRUGS

"Promin" is the sodium salt of p,p'-diaminodiphenyl-sulfone-N,N'-didextrose sulfonate. "Diasone" is disodium formaldehyde sulfoxylate diaminodiphenylsulfone. "Promizole" is 4,2'-diaminophenyl-5'-thiazolylsulfone. Diaminodiphenylsulfone, the parent chemical from which these drugs are derived, seems to be the active principle of each.

It is well known that the sulfone drugs were first assayed with satisfactory results in experimental animal tuberculosis by Feldman and associates,⁴ Calloman⁵ and others. They were later put to therapeutic

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From the United States Marine Hospital (National Leprosarium).
Read before the Section on Dermatology and Syphilology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

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test in human tuberculosis by Hinshaw,⁶ Petter and Prenzla⁷ and others, with conflicting findings. At present it seems that the sulfone drugs have been abandoned in clinical tuberculosis in favor of antibiotics. Whether this is a wise decision only time will tell.

TECHNIC OF ADMINISTRATION

In leprosy, oral administration of "promin" was tried first but proved to be too toxic. The patients could not tolerate an adequate dose. Since then intravenous injections of "promin" have been favored in all cases.⁸

The dose of "promin" which consistently gives good results with a minimum of toxic effects is 5 Gm. daily. An initial dose of 1 Gm. daily being increased gradually, this dose is attained in the majority of patients. The most frequent toxic manifestation encountered is a slow destruction of erythrocytes. Infrequently, leukopenia and allergic dermatitis occur. Nausea, vomiting or headaches are seldom encountered and are never severe. Sneezing occurs rather frequently immediately after intravenous injection of the drug but disappears in a few minutes. Hematuria has not been seen in our group of patients but may develop on high dosages. In some patients who experience repeated toxic reactions the maximum dose may not exceed 2 Gm. Experience has shown the wisdom of discontinuing treatment for one week after each two weeks of daily intravenous injections of "promin." This routine technic has resulted in fewer and milder types of toxic reactions. During the week of rest, sufficient time is usually afforded the patient's hemopoietic system to restore the blood cells lost through the hemolytic action of this drug. It is seldom necessary to administer iron and liver extract as adjuvants for anemia. Urinalysis and red and white blood cell counts and hemoglobin estimations are performed for each patient every three weeks to detect early manifestations of toxicity.

The blood concentration of "promin" following each intravenous administration rises rapidly but is transitory. The drug is rapidly eliminated in the urine, and usually only a trace or none remains in the blood stream at the end of twenty-four hours. The rapid elimination of "promin" from the body together with its relatively low toxicity on present recommended dosage has suggested the use of a larger daily dose given in several divided doses or over a period of several hours as with the multiple syringe or intravenous drip methods. Occasionally, however, in patients with renal impairment, after a prolonged course of treatment there is apt to be an accumulation of "promin" in the blood. In such cases, high blood levels, reaching 20 to 30 mg. per hundred cubic centimeters in twenty-four hours, have been found and the dosage must be materially reduced.

"Diasone" therapy was initiated in July 1943.⁹ Muir's experience with "diasone"¹⁰ has been somewhat

similar to ours but was of a shorter duration. "Diasone" has the advantage over "promin" of being less toxic by oral administration; otherwise, its toxic effects are similar to those of "promin." Treatment should be started with small doses, which are gradually increased as the patient builds up a tolerance for the drug. At present, treatment is started with one 0.3 Gm. capsule or tablet by mouth daily. Provided no toxic reactions are observed in two weeks, the dose is increased to two 0.3 Gm. capsules or tablets a day. After a few more weeks, in the majority of patients, the optimal dose of 0.3 Gm. three times a day is tolerated. Rest periods of two weeks are advisable every two months. Periodic laboratory examinations of blood and urine are necessary, as with patients taking "promin." Occasionally it is found necessary to administer iron and liver extract to counteract secondary anemia.

Blood levels of "diasone" have been found to be low, since the drug is rapidly excreted in the urine. An initial rise of several milligrams per hundred cubic centimeters declines to from 1 mg. per hundred cubic centimeters to a trace twelve hours after the evening dose.

"Promizole" as a treatment of leprosy was started in March 1945.¹¹ It is administered by mouth in tablets or capsules containing 0.5 Gm. each. At first 0.5 to 1 Gm. is given three times a day. After one to two weeks this dose is gradually increased to individual tolerance. An optimal dose of 6 to 8 Gm. a day is seldom exceeded. Toxic manifestations are rare and usually mild but, when they occur, are similar to those of "promin" and "diasone" therapy.¹² Frequent clinical and laboratory examinations are likewise necessary to detect any untoward manifestations early.

With large daily doses of "promizole" it is found that the blood level declines rapidly and reaches 1 to 2 mg. per hundred cubic centimeters twelve hours after the last dose.

None of the sulfone drugs produce crystalluria. No evidence of renal damage has been observed under the carefully controlled technic of medication employed in this institution. Early in our experimental study with "diasone," when a large initial dose of 1 Gm. daily was used, a few cases of hematuria were encountered. Even in these patients no crystals were recovered from the urine after careful search, and the causative factor of the hematuria was not determined.

THERAPEUTIC EFFECTS

With but few exceptions, only patients with lepromatous leprosy, and mostly with far advanced disease, have been subjected to sulfone therapy. While no claim is made that these drugs are specific remedies, they have proved therapeutically more effective in leprosy than any previous treatment tried at the Carville Leprosarium. Unfortunately they work slowly. Definite objective improvement, as a rule, seldom becomes manifested before six months of treatment. Thereafter, improvement is progressive with few, if any, relapses. The disease seldom, if ever, appears to get worse under treatment. The percentage of patients improved is in direct proportion to the dura-

6. Hinshaw, H. C.; Pfeutze, K., and Feldman, W. H.: Treatment of Tuberculosis with Promin, *Am. Rev. Tuberc.* **47**: 26, 1945. Hinshaw, H. C.; Feldman, W. H., and Pfeutze, K. H.: The Clinical Administration of 4,2-Diaminophenyl-5-Thiazole Sulfone (Promizole) in Tuberculosis: A Preliminary Report, *Proc. Staff Meet., Mayo Clin.* **19**: 33, 1944.

7. Petter, C. K., and Prenzla, W. S.: Treatment of Tuberculosis with Diasone, *Am. Rev. Tuberc.* **49**: 308, 1944; Observation on Clinical Application of Diasone in Human Tuberculosis, *Illinois M. J.* **85**: 4, 1944.

8. Faget, G. H.; Pogge, R. C.; The Therapeutic Effect of Promin in Leprosy, *Pub. Health Rep.* **60**: 1165, 1945. Faget, G. H.; Pogge, R. C.; Johansen, F. A.; Fite, G. L.; Prejean, B. M., and Gemar, F.: Present Status of Promin Treatment in Leprosy, *Internat. J. Leprosy* **14**: 30, 1946.

9. (a) Faget, G. H., and Pogge, R. C.: Treatment of Leprosy with Diasone: A Preliminary Report, *New Orleans M. & S. J.* **98**: 145, 1945. (b) Faget, G. H.; Pogge, R. C., and Johansen, F. A.: Present Status of Diasone in the Treatment of Leprosy, *Pub. Health Rep.* **61**: 960, 1946.

10. Muir, E.: Preliminary Report of Diasone in the Treatment of Leprosy, *Internat. J. Leprosy* **12**: 1, 1944.

11. Faget, G. H.; Pogge, R. C., and Johansen, F. A.: Promizole Treatment of Leprosy, *Pub. Health Rep.* **61**: 957, 1946.

12. Faget, Pogge, Johansen, Dinan, Prejean and Eccles.¹ Faget and Pogge.^{2a}

tion and the intensity of treatment. It is our impression that the progress of improvement is similar with each of the three drugs. The diaminodiphenyl sulfone parent radical, common to all, appears to be the active principle. That the patients in the "promin" group are



Fig. 1 (case 1).—Before treatment.

as a whole in the best condition at present can probably be attributed entirely to their being under treatment for the longest period of time.

Experience has shown that the relation of improvement to duration of treatment can be approximately



Fig. 2 (case 1).—After treatment for two years with "promin."

estimated. After six months of treatment almost 25 per cent of the patients show some improvement. After one year this percentage is increased to 60, after two years to 75, after three years to almost 100. The extent and stage of the disease does not suppress the

action of the sulfone. Even far advanced lepromatous disease is checked and improves under treatment. The extent of improvement usually varies proportionately with the size of the dosage tolerated by the individual patient. The use of a larger daily dose of "promin" than that at present recommended, given by the multiple syringe or intravenous drip methods, has not been sufficiently explored as yet to determine whether or not improvement might be hastened without danger.

Only objective improvement has been considered in evaluating the therapeutic action of the sulfones. Clinical objective improvement is substantiated by photographic and laboratory evidence.

Clinical improvement in cases of lepromatous leprosy is manifested in various ways. Small nodular lesions slowly shrink and flatten to complete absorption. Finally only a pigmented spot usually remains. Larger and deeper nodular lesions disintegrate more slowly with subsequent scar formation. Infiltrative plaques gradually subside with diminution of inflammatory swelling and edema of dermal tissues. Leprous ulcerations of extremities gradually form healthy granulations and heal through cicatrix formation. Trophic plantar ulcers become disinfected, granulate and gradually close with residual callosities. Occasionally regrowth of hair may follow resolution of lepromatous lesions. This has been found to occur in eyebrows, beard and arms and legs.

Mucosal lesions appear to respond more rapidly than cutaneous lesions. Oral nodules and infiltrations usually subside and disappear after a few months.

Oral ulcerations also heal within a few months to a year. Nasal obstruction is relieved through subsidence of the inflammatory mucosal lesions of leprosy rhinitis. Epistaxis is checked by the healing of nasal mucosal ulcerations. Improvement in leprosy laryngitis occurs frequently, with restoration of the patient's voice and relief of dyspnea. Emergency tracheotomies generally become unnecessary.

Sulfone therapy appears capable of checking the progress of conjunctival, corneal and iridocyclitic leprosy infiltration. There is occasional improvement of impaired vision.

ACUTE LEPRO REACTIONS

Attacks of acute lepro reactions with erythema nodosum or erysipeloid dermatitis are not commonly aborted by sulfone therapy. Patients experiencing such episodes previously may have recurrences during the course of treatment. However, the frequency as well as the severity of subsequent attacks is lessened by this treatment. In only a few cases, severe attacks have occurred despite treatment. In some of these instances it was found best temporarily to discontinue the administration of the sulfone drugs.



Fig. 3 (case 2).—Before treatment.

Attacks of acute iridocyclitis may occasionally occur during the course of sulfone therapy. These are generally mild and subside on continuation or intensification of treatment. Episodes of acute leprous neuritis are also not prevented or aborted by sulfone therapy. However, it is believed that these drugs are not

responsible for the initiation of these acute inflammatory reactions in leprous nerves.

BACTERIOSCOPY

Another feature in the improvement during sulfone therapy is the reversion of skin and nasal smears from bacteriologically positive to negative. Statistically, it has been found that the percentage of bacterioscopically negative smears among treated patients is in direct proportion to the duration of



Fig. 4 (case 2).—After eighteen months of treatment with "diasone."

treatment. During the first year of treatment, practically all cases of lepromatous leprosy remain bacilliferous. During subsequent years of treatment, an ever increasing proportion of patients revert from positive to negative in the routine monthly skin and nasal smears. After four years of continuous intensive treatment the incidence of negative reports exceeds 50 per cent. This strongly suggests that the sulfone drugs have some bacteriostatic properties against Hansen's bacillus.

A study of the histology of lesions before and after prolonged treatment with "promin" has been reported

by Fite.¹³ His findings indicate that "promin" appears to eliminate bacillary infection from the blood stream and the small blood vessels, thereby preventing the formation of new lesions. Improvement under "promin" does not seem to be accompanied by characteristic cellular changes. The histologic changes which do occur are predominantly of an atrophic nature,



Fig. 5 (case 3).—Before treatment.

with gradual lessening of the number of acid-fast organisms present in the lesion to the point of final disappearance.

Three brief clinical abstracts together with photographs before and after treatment will serve to demon-

strate further the therapeutic effects of the diamino-diphenyl sulfone preparations "promin," "diasone" and "promizole" in leprosy.

REPORTS OF CASES

CASE 1.—A Mexican woman, aged 23, had far advanced lepromatous leprosy at the beginning of treatment with "promin" in October 1944. The disease was of about five years' standing. Clinical manifestations at time of admission in April 1942 were: extensive confluent lepromas covering almost the entire face, body and limbs; a few small ulcers on right elbow. The disease progressed unfavorably with chaulmoogra oil given orally and intramuscularly over a period of two and one-half years. Skin and nasal smears were always positive for *Mycobacterium leprae*. After twenty-four months on "promin" therapy, 5 Gm. intravenously daily, the patient was discharged with the disease arrested. At the time of discharge there were no active lesions present and the patient had been bacterioscopically negative for twelve consecutive months (figs. 1 and 2).

CASE 2.—A Negro man, aged 32, had moderately advanced lepromatous leprosy of about six years' duration. Clinical manifestations were: multiple nodules, discrete and confluent, scattered over forehead, ears, cheeks and nose; a few small nodules scattered over both arms and legs. No improvement was noted with chaulmoogra oil given orally and intramuscularly over a period of two years. Skin and nasal smears were always positive for *M. leprae*. The patient was discharged with disease arrested after nineteen months of treatment with "diasone." The dosage was 1 Gm. daily. At the time of discharge there were no active lesions present and the patient had been bacterioscopically negative for twelve consecutive months (figs. 3 and 4).

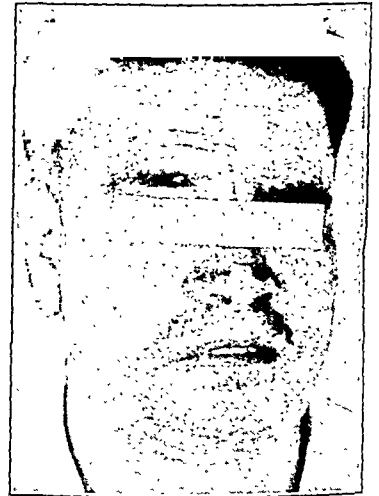


Fig. 6 (case 3).—After twelve months of treatment with "promizole."

CASE 3.—A Mexican man, aged 35 years, had fairly early active mixed type of leprosy at the beginning of treatment with "promizole." The disease was of about six years' standing. Prior to April 1945, when "promizole" was begun, he had received only eleven intramuscular injections of chaulmoogra oil in 1941 and sixteen in 1942 and chaulmoogra oil by mouth in doses of 25 minims (1.5 cc.) three times per day regularly from 1942 to 1945. When "promizole" was begun the clinical findings were as follows: discrete eruption of brown nodules over the face, ears, limbs and body, becoming confluent in some areas over the face and ears, and some areas of anesthesia over feet, ankles and lower third of legs. Nasal and skin smears were positive for *M. leprae*.

"Promizole" has now been administered in doses of 6 Gm. daily for a period of twenty-three months. Definite improvement has taken place in the shrinking of all nodules after one year of therapy. At present skin and nasal smears are negative (figs. 5 and 6).

STATISTICS

Up to the present at the Carville Leprosarium sulfone therapy of 371 patients has been initiated. The accompanying table reveals the extent to which "promin" and "diasone" have been used and shows the number and percentage of arrested cases obtained in patients treated with these drugs in relation to duration of treatment.

¹³ Fite, G. L., and Gemar, F.: Regressive Changes in Leprosy Under Promin Therapy, *South. M. J.* 39: 277, 1946.

The "promin"-treated group has been excluded, since only 20 patients have been treated for a period too short for proper evaluation. Another group of 36 patients, treatment of whom was initiated but later discontinued, has also been deleted. The reasons for discontinuation of treatment were as follows: (1) voluntary absence, 14; (2) deaths mainly from inter-current disease or accidents, 13; (3) toxic manifestations or inability to take drug, 7, and (4) aliens deported from this country, 2. A small group of patients has received at least six months' treatment with either "promin" or "diasone" before changing from one to the other because of inability due to toxic manifestations or other reasons to take one drug and not the other. Four patients of this group are at present receiving "promin" and 14 "diasone."

The "promin" and "diasone" groups comprise 317 patients who have been treated for varying periods up to six years. Eight have been under treatment for five to six years, 37 for four to five years, 44 for three to four years, 76 for two to three years, 60 for one to two years and 92 for less than one year. In the "promin"-treated group there are 178 patients; in the

arrested disease, although 1 who has had about four years of treatment will soon meet the necessary requirements. These patients because of intolerance to the drugs or for other reasons were rather irregular in taking treatment.

In the entire group there are 38 patients discharged with arrested disease, representing 11.9 per cent of all the patients treated with "promin" or "diasone." That the percentage of patients discharged with arrested disease for the entire period is greater in the "promin" (17.4) than in the "diasone" group (5.8) can, perhaps, best be explained by the fact that the patients treated with "promin" have been under treatment for a longer time. Any attempt to compare the efficacy of these drugs in arresting the disease must await more prolonged treatment with "diasone."

During the year 1946 the number of patients discharged with arrested disease has more than doubled the annual average for the ten years prior to the institution of sulfone therapy, and the number of deaths was less than half the annual average for the previous years. Since the hospital population has not varied significantly in number or composition during the peri-

Number of Cases of Leprosy Treated and the Number and Percentage of Arrested Cases Secured with "Promin" and "Diasone" Therapy in Relation to Duration of Treatment

Duration of Treatment	"Promin"			"Diasone"			Both "Promin" and "Diasone"			Total		
	Number Treated	Number Arrested*	Percentage Arrested	Number Treated	Number Arrested*	Percentage Arrested	Number Treated	Number Arrested*	Percentage Arrested	Number Treated	Number Arrested*	Percentage Arrested
Under 1 year	33	0	0.0	59	1	1.7	0	0	0.0	92	1	1.1
1 to 2 years	33	3	9.1	25	2	8.0	2	0	0.0	60	5	8.3
2 to 3 years	31	7	22.6	32	2	6.3	10	0	0.0	76	9	11.8
3 to 4 years	35	11	31.4	5	2	40.0	4	0	0.0	44	13	29.3
4 to 5 years	26	8	30.8	..	..	...	1	0	0.0	37	8	21.6
5 to 6 years	7	2	28.6	..	..	...	1	0	0.0	8	2	25.0
	178	31	17.4	121	7	5.8	18	0	0.0	317	38	11.9

* An arrested case is one having twelve consecutive months of negative bacterioscopy including skin and nasal scrapings and being free from any other signs of disease activity for at least one year.

"diasone"-treated group 121 and in the group that received both drugs at one time or other, 18.

Thirty-one, or 17.4 per cent, of the "promin"-treated patients have been discharged with arrested disease. An arrested case of leprosy in this institution is defined as one having twelve consecutive months of negative bacterioscopy including skin and nasal scrapings and being free from any other signs of disease activity for a period of one year. Of the 31 discharged patients 3 were under treatment from one and one-half to two years, 7 from two to three years, 11 from three to four years, 8 from four to five years and 2 over five years. There have been no known relapses, and 11 of these patients have chosen to remain under observation in the institution. The period of observation following arrest of the disease has varied from a few months to three years.

Seven, or 5.8 per cent, of the patients treated with "diasone" have been discharged with arrested disease. Of these 1 had the tuberculoid type of leprosy; he was treated for less than a year, and the disease would undoubtedly have become arrested without treatment. Two of the other 5 were treated from one to two years, 2 from two to three years and 2 from three to four years. Four of these have since remained under close observation for four months to two years without recurrence of the disease.

The group of patients having received "promin" and "diasone" at different intervals present no cases of

ods under consideration, this good record can be attributed entirely to the beneficial effects of sulfone therapy.

The ultimate value, however, of sulfone therapy in leprosy is not definitely established. This must await the test of time, five to ten years and possibly even longer. Only then can one be reasonably sure that relapses will not occur.

ANTIBIOTICS

Among the antibiotics penicillin has been used and streptomycin is at present being investigated in the treatment of leprosy. As reported by one of us¹⁴ and by Mom,¹⁵ penicillin, except for some favorable action on secondary infections of leprosy ulcerations, does not influence the course of the disease.

Treatment with streptomycin has been investigated in a group of 10 patients with lepromatous leprosy for a period of eight months.¹⁶ The drug was administered intramuscularly in doses of 0.25 Gm. (250,000 units) every three hours for a total of 2 Gm. (2,000,000 units) in twenty-four hours. This treatment was continued without interruption, except in 2 cases, for four months. Thereafter, because of rather severe

14. Faget, G. H., and Pogge, R. C.: Penicillin Used Unsuccessfully in Treatment of Leprosy, *Internat. J. Leprosy* 12: 7, 1944.

15. Mom, A. M., and Sister Maria Bernal: Penicillin in Treatment of Leprosy, *Internat. J. Leprosy* 14: 37, 1946.

16. Faget, G. H., and Erickson, P. T.: Use of Streptomycin in the Treatment of Leprosy: A Preliminary Report, *Internat. J. Leprosy*, to be published.

toxic manifestations in the form of vertigo, tinnitus, loss of hearing, fever, cutaneous eruptions and an intense eosinophilia, the dosage was reduced to 0.5 Gm. every twelve hours for a total of 1 Gm. (1,000,000 units) in twenty-four hours.

Therapeutically, encouraging changes seemed to occur in the leprosy lesions in some cases during the first three months of treatment. There appeared to be some changes on the improvement side in some of the nodular and macular lesions. Nasal obstruction and epistaxis were relieved in a few cases. A leprosy ulcer of the soft palate healed rather rapidly in 1 patient. After this initial response, further improvement was not tenable, suggesting development of resistance to streptomycin by *M. leprae*.

Although encouraging therapeutic effects from streptomycin seemed to occur, they are not as yet conclusively demonstrated. Also, when the drug is given in large and continuous dosage over a prolonged period of time it produces toxic manifestations which seem to be too severe in comparison with the results obtained. For comparable results the sulfones have thus far been found to be less toxic and therefore more feasible in the treatment of leprosy.

CONCLUSIONS

In the chemotherapy of leprosy with the sulfone drugs "promin," "diasone" and "promizole," objective clinical improvements are produced which are sustained and cannot be attributed to spontaneous remissions in the disease. These objective improvements, although slow in their development, are progressive during the course of treatment. They are substantiated by the photographic changes which occur in the lesions. Laboratory examinations indicate that the sulfone drugs have a bacteriostatic action in leprosy.

Since the sulfone drugs are slowly acting chemotherapeutic agents, further research should be continued in the hope of discovering more powerful bactericidal agents.

Streptomycin is an antibiotic deserving further investigation as a possible chemotherapeutic agent for leprosy. Toxic effects, however, seem to be too severe in comparison with results obtained.

Until faster acting remedies are discovered, the sulfone drugs must be considered the optimal treatment of leprosy. Their further investigation in all leprosy throughout the world is recommended.

ABSTRACT OF DISCUSSION

DR. HAROLD M. JOHNSON, Honolulu, Hawaii: At last we are on the threshold of optimism and may later even cautiously mention the word "cure." The encouraging reports of Faget and his group influenced Dr. Norman R. Sloan of Kalaupapa settlement, on the island of Molokai, to seek these promising drugs. "Promin" and "diasone" could not be obtained until May 1946. Chaulmoogra oil and its derivatives had long been discarded in Hawaii. Diphtheria toxoid and quinacrine hydrochloride had their trial without success. "Promin" has been given to 106 patients at Kalaupapa at about the same dosage and routine as used at Carville. Seventy-two have received "promin" for six months or more. A conservative estimate shows that 55 are definitely improved, 8 stationary or doubtful and 9 worse. This last group is composed principally of patients suffering from intercurrent lepra reactions. One hundred and

nine patients are now receiving "diasone," but it is too early to evaluate as the drug has been used only a few months. It appears to be as effective as "promin" and its oral use renders the drug easy to administer. The Pyridium Corporation's drug 806 (2-butoxy-5-aminopyridine sodium formaldehyde bisulfite) is being used on 8 young patients. In 1 a severe hematuria developed after seven weeks and the drug was stopped. Dr. Sloan believes that it has produced a definite regression of facial lepromas in several cases. The toxicity may restrict its use. At the Kalihi receiving hospital, near Honolulu, 21 patients are being treated with "promin." In these cases the disease is not so severe and active as in Kalaupapa, but Dr. Edwin Chung-Hoon has enough material correctly to evaluate the improvement. The results and reactions closely parallel the cases treated at Kalaupapa. "Diasone" is also being used when intravenous injections are impossible or undesirable. "Diasone" is not an innocuous drug. It has caused more reactions than "promin." One patient at the Kalihi hospital died with agranulocytic angina. "Diasone" was the etiologic agent. It is not unusual to see a Herxheimer-like reaction in the tuberculoid and lepromatous types. This can be alarming if laryngeal lepromas suddenly swell and produce stenosis. A few cutaneous reactions have occurred but nothing more than urticaria and fleeting macular exanthems. Fatigue, cyanosis and anemia must be watched. The cases of tuberculoid leprosy responded well undoubtedly because of less virulent phase of this type of leprosy. It is well known that the cases of tuberculoid leprosy undergo regression without treatment, but the reactions subside much faster with "promin" and "diasone."

DR. M. T. VAN STUDDIFORD, New Orleans: Those suffering from Hansen's disease have a psychology all their own. Any agent which causes a rise of temperature or is followed closely by acute lepra reactions is quickly avoided by them. The older inmates of the hospital have become good prognosticators and have discarded chaulmoogra oil for the sulfones. These they take with enthusiasm, preferring in the main "promin." In this report the authors have dealt with the sulfones separately and have shown statistical results superior to any previous methods or drugs. Using six, twelve, eighteen and twenty-four month periods of treatment, they have shown a gradual improvement in the lepromatous group; they have shown that there has not yet been a cure-all found but that results are so promising that with improvements in methods in maintaining longer, higher blood concentrations and with improvement of the drugs, a higher percentage of cures can be expected in the future. Hansen's disease is not to be reckoned in months but in years or decades. We are not dealing with a hurry-up job. Reactions of the skin to the sulfones are commonly a rosacea-like eruption on the face, shoulders and arms. The discrete lesions resemble papular necrotic tuberculids. These involute slowly if treatment is stopped but seldom cause enough reaction to discontinue treatment. One must keep certain facts in mind in the treatment of Hansen's disease; namely, that tissue which has been affected is slowly, if ever, replaced; changes for good or bad come and go; several years of improvement might be lost in weeks or months, but with any treatment that has accomplished continuous good results, as have the sulfones, a brighter outlook can be maintained until a better treatment is found.

DR. PAUL T. ERICKSON, Carville, La.: It is somewhat disheartening to hear that a death has occurred from the use of "diasone" in the treatment of leprosy. Since this death was apparently due to agranulocytosis, it emphasizes the need for close observation on white blood cell counts and differential counts in patients under treatment with this drug. We have not had a single death from drug toxicity from any of the sulfone drugs and toxic manifestations have been rather mild. Some patients have been taking "promin" daily for as long as six years and "diasone" daily for three and one-half years, except for rest periods, and have done very well. A constant vigil, of course, has been maintained to discover signs of toxicity early. Patients with decreased renal function have been

kept on lower dosages. I did not mention much about the subjective improvement or the gain in weight which is so noticeable in our patients after sulfone therapy. The great majority say they have more pep, sleep better and feel much better. Gain in weight is general; some patients have to be cautioned about gaining too much weight. Finally, a word of caution is necessary. I do not wish to leave you with an impression that is too optimistic. Arrested cases of leprosy were secured on chaulmoogra oil when that drug was so much used. After three to five years, however, many of these persons with so-called arrested leprosy returned in a condition much worse than at their original admission. I hope the same will not occur with cases arrested on the sulfone drugs; only time will tell.

Special Articles

ETHICS GOVERNING THE SERVICE OF PRISONERS AS SUBJECTS IN MEDICAL EXPERIMENTS

Report of a Committee Appointed by Governor
Dwight H. Green of Illinois

INTRODUCTION

During the war the Governor of the state of Illinois and the Department of Public Safety permitted prisoners in one of the state penitentiaries in Illinois to serve voluntarily and without any prior promise of a pardon or a reduction of sentence in prison as subjects in medical experiments. These experiments were designed to find a better preventive and curative treatment of malaria. The question has arisen of giving a reduction of sentence in prison as a reward for such service in addition to that ordinarily allowed because of good conduct.

The expression "reduction of sentence in prison" is used to indicate that under the parole system the total sentence is not reduced since the prisoner is subject to the regulations of the Parole Board after parole, his activities are supervised and the board may return him to prison. A prisoner is not subject to parole or a reduction of sentence in prison until the minimum duration fixed by court has been served in the case of sentences for an indeterminate period (e. g., ten to twenty years) when the maximum is less than life and in the case of sentences for a definite term of years but not including life.

PURPOSE OF COMMITTEE

The committee was appointed by the Governor to advise the Department of Public Safety relative to the ethical principles governing the conditions under which prisoners may be (a) permitted to serve as subjects for medical experiments and (b) granted a reduction of sentence in prison as a reward for such service.

THE ESTABLISHED ETHICAL RULES UNDER WHICH HUMAN BEINGS HAVE SERVED AS SUBJECTS IN MEDICAL EXPERIMENTS

Medical scientists, medical students, soldiers, sailors and other volunteers have on many occasions served as subjects in medical experiments designed to advance

human welfare. These experiments have been conducted according to certain ethical principles or rules in all the countries of the world which have contributed to the prevention, cure and control of disease and suffering. These rules, which have been in force by common understanding and practice, may be summarized as follows:

1. Consent of the human subject must be obtained. All subjects have been volunteers in the absence of coercion in any form. Before volunteering, the subjects have been informed of the hazards, if any.

2. The experiment to be performed must be based on the results of animal experimentation and on a knowledge of the natural history of the disease under study and must be so designed that the anticipated results will justify the performance of the experiment. The experiment must be such as to yield results unobtainable by other methods of study which are necessary for the good of society.

3. The experiment must be conducted (a) only by scientifically qualified persons and (b) so as to avoid all unnecessary physical and mental suffering and injury and (c) only after the results of adequate animal experimentation have eliminated any a priori reason to believe that death or disabling injury will occur. If there is any a priori reason that accidental death or disabling injury may occur, as in such experiments as those of Walter Reed in which the mosquito was demonstrated to transmit yellow fever, then medical scientists should serve or should have served as volunteers along with nonscientific personnel.

These rules have been adopted in essence by the House of Delegates of the American Medical Association.¹

An example of human experiments which were ideal because of their conformity with the foregoing ethical rules are the experiments at Stateville.

HISTORICAL BACKGROUND FOR USE OF PRISONER VOLUNTEERS

A historical background for the use of prisoner volunteers as subjects in medical experiments exists.² The matter of reward for such service may be summarized as follows:

In one experiment a pardon was offered as a reward prior to the starting of the experiments; in another experiment, a definite reduction of sentence prior to starting the experiments was offered, and in other experiments a reduction in sentence before starting the experiment was not promised but a reduction in sentence was considered and allowed in relation to each individual case (New Jersey and Illinois).

In this connection it would seem likely that reduction of sentence having been allowed, such reduction of sentence may be known to prisoners and that whether it is or is not stated in the contract made with the volunteer, it will be operative in his mind and may influence his decision to volunteer.

1. Supplementary Report of the Judicial Council of the American Medical Association, J. A. M. A. 132:1090 (Dec. 28) 1946.

2. Strong, R. P.: A Consideration of Some of Bails' Recent Views in Connection with the Study of Immunity, *Philippine J. Sc.* 1: 512, 1906. Strong, R. P., and Crowell, B. C.: The Etiology of Beri-Beri, *ibid.* 7: 291, 1912. Goldberger, J., and Wheeler, G. A.: Experimental Pellagra in White Male Convicts, *Arch. Int. Med.* 25: 451 (May) 1920. Goldberger, J.: Pellagra: Causation and a Method of Prevention, *J. A. M. A.* 66: 471 (Feb. 12) 1916; The Prevention of Pellagra: A Test of Diet Among Institutional Inmates, *Pub. Health Rep.* 30: 3336, 1915. Information on file with the National Research Council. Bixby, T. L., Deputy Commissioner, Department of Institutions and Agencies, State of New Jersey: Personal communication to J. W. Ragen, Warden, Stateville, Ill., Sept. 9, 1946. Ragen, J. W., Warden, Stateville, Ill.: Personal communication to T. P. Sullivan, Oct. 8, 1946. Coatsney, G. R., U. S. Public Health Service: Personal communication to A. C. Ivy, April 11, 1947.

This report has been slightly condensed for publication in *THE JOURNAL*. The members of the committee were Dr. Robert S. Berghoff, Dr. Morris Fishbein, Rabbi George Fox, Father Ralph Gallagher, Dr. A. C. Ivy, chairman, Mr. Kaywin Kennedy and Mr. Oscar Mayer.

THE PURPOSES OF IMPRISONMENT

We should emphasize the generally accepted purposes of imprisonment. There are five such purposes:³

1. Punitive or retaliative, historically the oldest purpose of imprisonment, holds that revenge is the purpose of punishment.
2. Expiative holds that some sacrifice or atonement or penance by the wrongdoer is necessary and is best fulfilled by punishment.
3. Exemplary or deterrent is to try to prevent crime by the example of punishing persons who commit crime.
4. Socioprotective is the wish to protect society from dangerous and vicious persons.
5. Reformative indicates that the purpose of imprisonment is to reform the prisoner.

THE PURPOSE OF THE PAROLE SYSTEM

A reduction of sentence in prison is now recognized under the parole system "for the purpose of encouraging and rewarding good conduct and industry"⁴ (page 39), and for "exceptional bravery or fidelity"⁴ (page 42) in a good cause. The parole law is based on the presumption that the reward of good behavior in prison and the supervision of the parolee after release from prison are reformative. The prisoner who does not cause trouble and manifests industry expiates some of his offense against society and has given some assurance that he can live lawfully.⁵ It is also presumed, at least in part, that good conduct in prison is an evidence of true reformation and not of a desire to be released from prison.

The reduction of sentence in prison under the parole system is viewed as a reward for good conduct. Service as a subject in a medical experiment is considered to be a form of good conduct.

THE OPERATION OF THE PAROLE SYSTEM

It would appear likely that a reduction of sentence in prison as a recognition for service in a medical experiment is consonant with the statutory "good time," "merit time" and "industrial credits" provisions of the parole system.

Prisoners render meritorious services in prison, such as working in a barber shop, the kitchen, the shoe shop or furniture shop, and this service is rewarded. The rendering of such service is encouraged by the warden and his administrators, and service as a subject in a medical experiment may be similarly encouraged and rewarded.

WHAT SORT OF VOLUNTEER IS ACCEPTABLE?

Since one of the purposes of the parole system is reformative, the reformative value of serving as a subject in a medical experiment should be considered. Serving as a subject in a medical experiment is obviously an act of good conduct, is frequently unpleasant and occasionally hazardous and demonstrates a type of social consciousness of high order when performed primarily as a service to society. The extent to which the service of a prisoner in an experiment is motivated by good social consciousness on the one hand and by the desire for a reduction of sentence in prison on the other is a matter for consideration in the case of each prisoner.

3. Bruce, A. A.; Burgess, E. W., and Harno, A. J.: *Parole and the Indeterminate Sentence*, Parole Board of the State of Illinois, 1928.

4. *Rules and Statutes Relating to Parole and Pardons*, Department of Public Safety, Division of Correction, September 1944.

5. Act of March 19, 1872, State of Illinois. See also, Act establishing Department of Public Welfare as amended in 1927. *Progressive Merit System*, Parole Board of the State of Illinois, March 1, 1920. Bruce, Burgess and Harno.³ Footnote 4.

Regardless of a prisoner's motives for volunteering for an experiment, a habitual criminal or a prisoner who has committed a notorious or heinous crime should not be considered an acceptable volunteer for a medical experiment.

THE REWARD SHOULD NOT BE EXCESSIVE

The most important requirement for the ethical use of human beings as subjects in medical experiments is that they be volunteers. Volunteering exists when a person is able to say "yes" or "no" without fear of being punished or of being deprived of privileges due him in the ordinary course of events.

A reduction of sentence in prison, if excessive or drastic, can amount to undue influence. If the sole motive of the prisoner is to contribute to human welfare, any reduction in sentence would be a reward. If the sole motive of the prisoner is to obtain a reduction in sentence, an excessive reduction of sentence which would exercise undue influence in obtaining the consent of prisoners to serve as subjects would be inconsistent with the principle of voluntary participation.

It is not considered a function of this committee to determine where the reward becomes excessive. This is a matter to be considered in relation to each prisoner and the nature of the experiment.

Obviously no one may make representations to a prisoner concerning the extent and types of reward which may accrue as a result of his service as a subject in a medical experiment.

SUMMARY

The ethical principles most pertinent to the present consideration are (1) that all subjects should be volunteers in the absence of coercion in any form; (2) before volunteering, they be adequately informed of the hazards, if any, and (3) that the choice of volunteers be made on the basis of established criteria.

There exist a number of precedents for the reduction of sentence in prison of prisoners who have served as subjects in medical experiments. A reduction of sentence in prison for serving as a subject in a medical experiment may be considered favorable to the reformative purpose of imprisonment. Authorities agree that a reduction in sentence in prison under the parole system is a reward for good conduct and it is rational that a prisoner should earn "good time," "merit time" or "industrial credits" by serving as a subject in a medical experiment. However, it would seem self evident that any prisoner considered unlikely to become a law-abiding citizen, or who has committed a notorious and heinous crime, should not be considered favorable for service in a medical experiment.

Reduction of sentence for serving as a subject must not be excessive; the most important ethical requirement is that the prisoners be volunteers, and excessive reward can become undue influence or coercion and would be inconsistent with the principle of voluntary participation.

Obviously, the foregoing discussion and summarizing statements should be considered only as advisory to the Governor and his Department of Public Safety and should be acted on by the statutory authority of the state of Illinois.

It is recommended that a permanent Medical Committee be appointed to advise the Department of Public Safety regarding questions of a medical nature.

CANCER IN CHILDREN FROM BIRTH TO FOURTEEN YEARS OF AGE

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This article is the ninth of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment. When complete, the series will be published in book form by the W. B. Saunders Company under the sponsorship of the American Medical Association and the American Cancer Society.

Although it has been known and statistically recorded for many years that neoplasms in childhood result in a high mortality, only comparatively recently have cancer and related diseases received attention as an important child health problem. In the last decade cancer, leukemia and other tumors have exceeded almost all common diseases among the causes of death in certain age groups during childhood. This high mortality ratio is probably mainly due to the decline in deaths from other diseases. The increasing recognition and more accurate diagnosis of the neoplasms of childhood have likewise raised the statistical incidence.

Among the causes of childhood mortality in 1942 in the United States cancer and allied diseases stood tenth in the 2 year age group; third, from 3 to 10 years of age and sixth, from 10 to 14 years of age. In New York in the three year period 1942 to 1944 the deaths from neoplastic diseases during childhood exceeded those from all forms of tuberculosis (fig. 1). Wider recognition of this high mortality would stress the need for greater effort toward the establishment of early diagnosis of neoplasms in children.

It is well known that there are many types of cancer which are curable notwithstanding the present limited knowledge of the disease. An increasing number of survivals for five and ten years after treatment is being

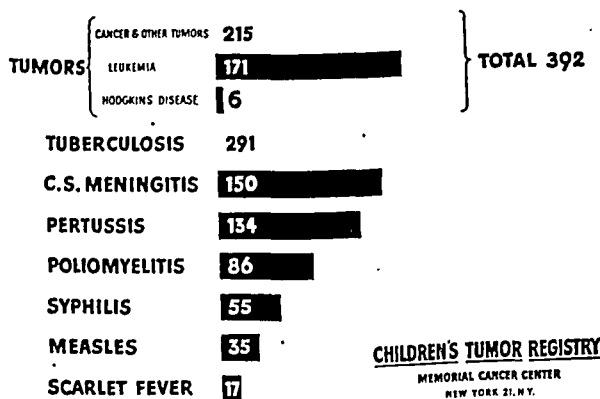


Fig. 1.—Mortality statistics for the years 1942, 1943 and 1944, compiled by the Bureau of Records and Statistics, Department of Health, New York, show a significant decline in deaths from communicable diseases, with deaths from tumors exceeding many of them.

reported. Although certain tumors (medulloblastomas and lymphomas, for example) have a consistently unfavorable prognosis, there is encouragement in reliable reports of long periods of survival among children who have had many of the other varieties of cancer:

intracranial tumors, osteogenic sarcoma, retinoblastoma and sarcomas of soft somatic structures, that is, fat, nerve and muscle. A child patient at Memorial Hospital, New York, who had a reticulum cell lymphosarcoma has lived for seven years without clinical recurrence.

Parents often remark that treatment for their child was not sought earlier because they had supposed that

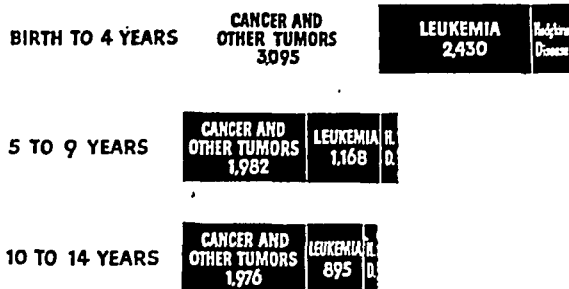


Fig. 2.—Mortality statistics for the United States, 1939 to 1943 inclusive, compiled by the United States Chamber of Commerce, show that many of the childhood deaths from tumors occur during the first five years of life. The exact figures for Hodgkin's disease are not available.

cancer was always fatal in a child. The prognosis is often unfavorable, but a constantly hopeless attitude in the presence of cancer in a child is not justified. A particularly important age group in which reduction in the death rate might be realized is that from birth to 5 years of age. Not only do the largest number of deaths, by five year age groups in children, occur in the age period from birth to 5 years of age (fig. 2) but also a large number of the curable types of cancer¹ are found in the preschool child. Increased vigilance in this group should bring many children under observation in time to effect a cure.

Cancer of the breast, uterus and ovaries in the female and cancer of the stomach, intestines and prostate in the male, which comprise such a large group of neoplasms in the adult, are so infrequent as to be curiosities in the juvenile group. Most types of tumors present in children are seldom observed after maturity, although they have been described in the adult.

Studies² of large series of cases indicate that there are six sites most frequently affected by cancer in children: (1) the bones; (2) the kidneys; (3) the eye and orbit; (4) the lymphatic and blood-forming organs; (5) the soft somatic tissues, and (6) the nervous system.³

TUMORS OF THE BONES

Varieties of Osseous Tumors.—The benign varieties of osseous tumors include bone cyst, osteochondroma, giant cell tumor and the recently described⁴ osteoid osteoma. These are observed not infrequently in pediatric and orthopedic clinics. Initially benign types of osseous tumors, such as osteochondroma and giant cell tumors, may become cancerous.

1. Schultz, O. T.: Tumors of Infancy and Childhood, in Abt, I. A.: *Pediatrics*, Philadelphia, W. B. Saunders Company, 1926, vol. 8, p. 641.
2. Dargeon, H. W., and others: Round Table Discussion on Tumors, Benign and Malignant, *J. Pediatr.* 30: 716-738 (June) 1947.
3. (a) Bailey, P.; Buchanan, D. N., and Bucy, P. C.: Intracranial Tumors of Infancy and Childhood, Chicago, University of Chicago Press, 1939. (b) Geschickter, C. E., and Copeland, M. M.: Tumors of Bone, New York, American Journal of Cancer, 1936. (c) Campbell, M. F.: *Pediatric Urology*, New York, The Macmillan Company, 1937, vol. 2, p. 253. (d) Dargeon, H. W.: Cancer in Childhood, St. Louis, C. V. Mosby Company, 1940. (e) Wyatt, G. M., and Farber, S.: Neuroblastoma Sympatheticum: Roentgenological Appearances and Radiation Treatment, *Am. J. Roentgenol.* 46: 485-495 (Oct.) 1941.
4. Jaffe, H. L., and Lichtenstein, L.: Osteoid Osteoma: Cases Showing Lesions in Relation to Shaft Cortices and Commonly Misclassified as Instances of Sclerosing Non-Suppurative Osteomyelitis or Cortical Bone Abscess, *J. Bone & Joint Surg.* 22: 645-682 (July) 1940.

The cancers are preponderantly osteogenic sarcoma and endothelioma, or Ewing's tumor (fig. 3). The types of cancers of the bone observed among children under 15 years of age on the Bone Service and Pediatric Service at Memorial Hospital from 1921 to 1946 were predominantly osteogenic sarcoma, of which there were 72 cases, and endothelioma, of which there were 50 cases. There were 15 tumors of miscellaneous types.

Osteogenic sarcoma occurs principally in the humerus, femur and tibia and less frequently in other long bones and flat bones. Endothelioma more frequently affects the long bones than the flat bones.

The bones may be involved by direct extension of an adjacent tumor of the soft part. The bones are also demonstrably affected in leukemia as well as in metastatic cancer, such as in neuroblastoma, retinoblastoma and embryonal carcinosarcoma of kidney (Wilms' tumor). Osseous involvement may also occur



Fig. 3.—P. P., a girl aged 7 months; endothelioma of femur with pathologic fracture (patient of Dr. Bradley Coley).

as part of the constitutional anatomic alterations of neurofibromatosis.

Diagnosis of Tumors of the Bone.—Osteogenic Sarcoma: There may be pain, impaired function, fever and swelling of the affected part in osteogenic sarcoma, but not all these symptoms are present in every case. The roentgenogram in some instances is difficult to interpret, and the growth may be confused with osteomyelitis or other osseous neoplasms. If any doubt exists a biopsy is indicated. An aspiration biopsy is often sufficient, but at times a formal biopsy is necessary.

Endothelioma (Ewing's Tumor): Pain is common in an endothelioma. Fever, swelling and impairment of function may also occur. The roentgenographic appearance of the growth is subject to a wider variation than is found in any other type of primary osseous tumor.⁵ A biopsy is therefore necessary in all cases.

In general the diagnosis of tumors of the bone must be made by exclusion. There are no pathognomonic

signs early in the disease, and even when the disease is moderately advanced differential diagnosis may offer difficulties. As is well known, the disease is insidious and frequently occurs in the growing child. The active growth of the child may interfere with the early subjective and objective indications of the disease which would be recognizable in the adult who has attained his maximum development.

Up to the age of at least 6 years the child makes relatively few complaints. Trauma, sometimes even severe injury, infections and other disorders are apparently accepted by the young child as part of his existence and are forgotten in a surprisingly short time after their occurrence. Therefore the diagnosis of disease in the preschool period, and frequently later, must usually be made by objective evidence. It is obvious that the symptoms should be thoroughly investigated when a child complains, especially if the pain or disability is constant or periodic.

There are two clinical observations, not flawless but helpful, which are applicable to the diagnosis of any childhood neoplasm, including that of cancer of the bone: (1) the unusual child; (2) the atypical symptom complex. The child who differs in appearance from his fellows or whose appearance, growth or physical capacity varies from that recognized as his average or normal state may have a neoplasm. An illness that fails to follow the usual clinical course either initially or subsequently may be cancer.

The usual diagnostic methods of history-taking, physical examination, roentgen examination, biopsy and blood analysis are usually sufficient to indicate the possibility of the presence of cancer of the bone.

Differential Diagnosis.—There are certain conditions encountered chiefly in childhood which should be considered in the differential diagnosis of osseous tumors: (1) infectious disorders; (2) noninfectious systemic disorders; (3) orthopedic defects; (4) traumatic masses; (5) nonosseous neoplasms; (6) metastatic neoplasms, and (7) tumors of the central nervous system.

The infectious group includes (a) rheumatic infections; (b) pyogenic osteomyelitis, both acute and chronic; (c) tuberculosis, and (d) syphilis. The non-infectious group includes (a) scurvy; (b) sickle cell anemia, and (c) xanthomatosis.

The disorders to be differentiated from tumors of the bone in children are herewith considered separately:

1. Infections to Be Differentiated from Tumors of the Bone: (a) Rheumatic infections: The pains associated with a tumor of the bone may be confused with the myalgias and arthralgias (growing pains) of rheumatic infection. In frank cases of rheumatic fever no problem arises, but in low grade rheumatic infections considerable difficulty may be experienced. The primary roentgenograms of the bones may be normal in appearance, and no clinical or laboratory evidence suggestive of rheumatic infections may exist. Neoplasms, however, cannot be ruled out initially. A therapeutic test of salicylate administration may reduce the symptoms of pain from tumor as well as from infection. Close observation is important in such cases and calls for periodic rechecking of clinical, laboratory and roentgenographic observations.

(b) Pyogenic osteomyelitis: In acute pyogenic osteomyelitis a history of sudden onset is usually helpful in diagnosis. The objective signs, the presence of

5. Coley, B. L., and Petersen, R. L., in Dargeon.²⁴

fever, the blood count, the blood culture and the roentgenograms—all are of assistance.

In chronic pyogenic osteomyelitis the history may or may not be of aid. The physical symptoms may also suggest a tumor. The roentgenograms do not always positively differentiate the two conditions, and histologically the diagnosis may be uncertain. A high alkaline phosphatase determination may suggest the possibility of a tumor. The pathologist's report with regard to sections of tissue is especially important in diagnosis. Usually the diagnosis can be made by an evaluation of all available measures, but infrequently it cannot.

CAUTION: If any doubt exists clinically as to the nature of the disease, radiation therapy should not be administered until after further observation.

(c) **Tuberculosis:** Tuberculosis of bone may resemble a neoplasm, particularly if tuberculous granulomas exist. The history, the roentgenograms of the lungs as well as of affected sites and a biopsy will generally clarify the situation. A weak Mantoux test (0.00001 mg.) may be performed.

(d) **Syphilis:** In the presence of syphilis osseous changes are usually noted in infancy, a period in which primary tumors of bone are rare; however, syphilis can roentgenographically simulate osseous tumors of many varieties. The maternal history and serologic tests in addition to the clinical symptoms and serologic examination of the child usually serve satisfactorily to differentiate the disease.

2. **Noninfectious Systemic Disorders:** (a) **Scurvy:** Scurvy rarely occurs after infancy. The two processes, osseous tumors and scurvy, may be differentiated by clinical evidences of the disease: gingival and cutaneous hemorrhage, multiplicity of osseous involvement, diminished capillary resistance and the usually prompt response to ascorbic acid therapy.

(b) **Sickle cell anemia:** There are severe crises in which extreme pain in the bones may be experienced in sickle cell anemia. Studies of the moist blood film will reveal the typical cells. There is also a positive indirect van den Bergh reaction and a high icterus index in this disease. It occurs almost exclusively in the Negro.

(c) **Xanthomatoses and other systemic diseases with osseous involvement:** Xanthomatoses such as Niemann-Pick disease, Tay-Sachs disease, Hand-Schüller-Christian disease and Gaucher's disease usually may be positively diagnosed, if not by clinical observations then by the presence of the characteristic cells in the biopsy specimen and by the studies of the sternal marrow.

3. **Orthopedic Defects:** The pain and disabilities of orthopedic disorders, either acquired or congenital, are not always easy to differentiate from those produced by tumors of the bone. This is particularly true in the young child. If improvement does not result after the indicated corrective measures have been taken, serial roentgenograms should be continued as a diagnostic safeguard against the possibility of cancer.

4. **Traumatic Masses:** Swellings of subcutaneous tissue secondary to injuries may infrequently cause discomfort or severe pain, but sometimes the masses are hard and relatively immovable. The history, the regression of the mass and the normal roentgenographic appearance will eliminate tumor in the diagnosis.

It is important to observe closely any swelling that is believed to arise from trauma but does not disappear within a reasonable time. Serial roentgenograms must

be taken and a biopsy performed if doubt as to the cause persists. The "silent" swelling attributed to trauma may be cancer.

5. **Nonosseous Neoplasms:** The bones may be involved by locally invasive tumors (liposarcoma, fibrosarcoma or myxosarcoma) in which the soft part component is usually conspicuous, but a biopsy may be required.

6. **Metastatic Neoplasms:** Neuroblastomas, retinoblastomas, lymphomas (Hodgkin's disease, lymphosarcoma and leukemia) not uncommonly exhibit involvement of the bones (fig. 4). There is usually clinical evidence of a primary site which is not in bone. Characteristics of the peripheral blood and sternal marrow are usually pathognomonic in the leukemias. Metastasis in bone from Wilms' tumors occurs but is rare. The primary intrarenal tumor is evident enough to clarify the diagnosis.



Fig. 4.—M. O'N., a girl aged 19 months; metastatic neuroblastoma.

7. **Tumors of the Central Nervous System:** Although it is unlikely that a diagnosis of local tumor of bone would be entertained without more evidence than pain or disability of an extremity, the possibility of referred pain to an extremity from a cord tumor is to be considered in the presence of such clinical symptoms.

Treatment of Osseous Tumors.—No generalization may be made for as large a variety of tumors of the bone as occur in children. With few exceptions, surgical treatment, often radical, is indicated.

For osteogenic sarcomas amputation of the affected leg or arm is still the recommended procedure. A course of radiation therapy is given preoperatively by some surgeons.

Prognosis.—Cancers of bone share a high mortality rate with other types of cancer which occur in the juvenile period. It is probable that this rate could be lowered. There are verified cases in the Bone Sarcoma Registry and Children's Tumor Registry of survival of children for ten years after treatment for cancer of the bone.

TUMORS OF THE GENITOURINARY TRACT

In tumors in children the genitourinary structure involved most frequently in both sexes is the kidney. In the male the testes and prostate-vesical-neck region are occasional sites of neoplasms. In the female the ovary and vagina are infrequently affected.



Fig. 5.—E. St. G., a girl aged 4½ years; Wilms' tumor; the retrograde pyelogram shows dislocation and distention of renal pelvis and calices.

*Embryonal Adenomyosarcoma of Kidney (Wilms' Tumor).*⁶—Wilms' tumor is one of the more commonly observed tumors throughout the childhood period. It occurs chiefly in the child between 4 months and 4 years of age; but it may be found at any age in childhood and into maturity and as late as the sixth or seventh decade. It is an embryonal tumor which originates early in fetal life, and it is seldom observed at birth⁷ (figs. 5 and 6).

The multiple types of tissue that the tumor may contain—muscle, fat, nerve, glands, cartilage, bone, glomeruli and tubules—suggest that it is better to consider the disease as a large group of neoplasms termed Wilms' tumors than as a single entity; in this way the course, the prognosis and the variability of end results are better understood.

Diagnosis: A mass in the abdomen or flank is usually the first indication of the disease. Symptoms of intra-abdominal pressure, such as constipation, distention, pain and indigestion, do not occur early. Hematuria or other urinary disorders are seldom present. The pyelogram reveals a dislocation of the kidney pelvis, usually downward or upward depending on the location of the tumor within the kidney. The calices and pelvis are distorted. Although most Wilms' tumors are not observed roentgenographically to extend beyond the vertebral column, some do appear to extend beyond the vertebral column; therefore this observation is not always of diagnostic significance.

Differential Diagnosis: Tumors of the genitourinary tract must be differentiated from splenomegaly and hepatomegaly; hydronephrosis; the distended abdomen

of megacolon; celiac disease; tuberculous peritonitis and many other tumors, including polycystic kidney and the lymphomas (lymphosarcoma, leukemic infiltrations and Hodgkin's disease); neuroblastoma; ganglioneuroma; myosarcoma; adrenal tumor; teratoma; pheochromocytoma, and mesenteric cyst. Most of these are readily differentiated by the history and clinical manifestations.

It is seldom that at least a tentative diagnosis of Wilms' tumor is not established preoperatively. Because the tumor is usually highly malignant biopsy is contraindicated.

Treatment: Surgical excision is performed as soon as possible. The large size of some of these tumors may increase the technical difficulties of removal. If this is the case, roentgen therapy usually, not always, will reduce the size of the tumor and is recommended by some surgeons. Postoperatively the site that the tumor occupied is irradiated.

Prognosis: There are many known cures of Wilms' tumors. There is no accurate way of knowing what the percentage of cures is, but the number of deaths from this disease is undoubtedly considerably higher than the number of cures. The conflicting reports of results probably reflect the variability of the inherent nature of Wilms' tumors as well as of the time which elapsed before the institution of treatment.

Tumors of the Testis.—Tumors of the testis are unusual and are mostly teratoid in nature. Their consistency varies, and they must be differentiated from hernia and hydrocele. They require immediate excision, and sometimes surgical treatment should be preceded by irradiation.

Tumors of the Vesical Neck and Prostatic Region.—The exact origin of many tumors of the vesical neck

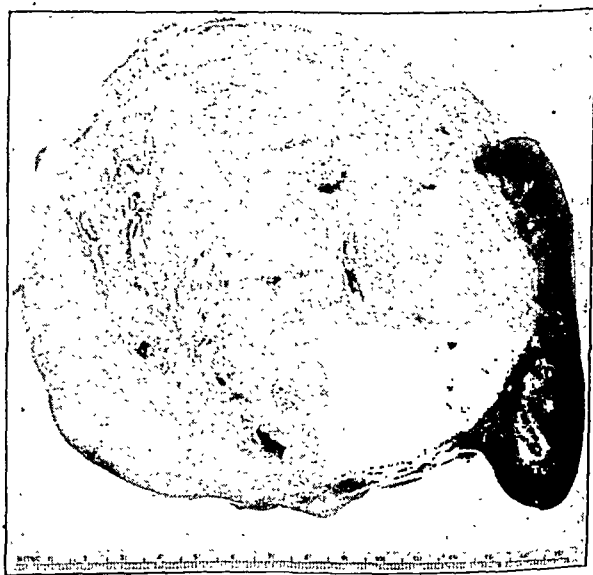


Fig. 6.—M. F., a boy aged 2½ years; Wilms' tumor, left: the mass contained a great deal of cartilage.

and prostatic region is difficult to determine histologically. The tumors produce symptoms of obstruction. They are usually myosarcomas and are not of frequent occurrence. Treatment has been unsatisfactory, inasmuch as surgical excision is usually impossible. Irradiation has not been effective except as a palliative measure.

6. Ladd, W. E., and White, R. R.: Embryoma of Kidney (Wilms' Tumor), J. A. M. A. 117:1858 (Nov. 29) 1941. Dean, A.: Wilms' Tumors, New York State J. Med. 45:1213 (June 1) 1945. Campbell, S.
7. Wells, H. G.: Occurrence and Significance of Congenital Malignant Neoplasms, Arch. Path. 30:535 (Aug.) 1940.

Ovarian Tumors.—Ovarian tumors are uncommon but are observed in the young child as well as in the adolescent. Teratomas, cysts, carcinomas, granulosa cell tumors and dysgerminomas have all been observed. The diagnosis is suggested by the presence of a pelvic mass which frequently causes constipation. Tumors that produce hormones often cause striking alterations in somatic and sexual development. The prognosis depends on the type of tumor and the promptness of treatment. Surgical removal of the tumor is required.

Myosarcoma of the Vagina.—Myosarcoma of the vagina is a rare tumor, but its presence should be suspected when a girl at any age from infancy through adolescence has a persistent bloody vaginal discharge. Treatment is by surgical removal of the tumor followed by irradiation. The prognosis is usually poor, perhaps because of delayed diagnosis.

TUMORS OF THE EYE AND ORBIT

Retinoblastoma (Glioma Retinae, Retinal Neuro-epithelioma).—Retinoblastoma arises from the granular layer of the retina and could be included histogenetically under tumors of the nervous system. It appears to have been one of the earliest described⁶ cancers in children. Many cases are recorded in the literature. It is seldom observed after the fifth year and most frequently occurs during infancy (figs. 7 and 8). The

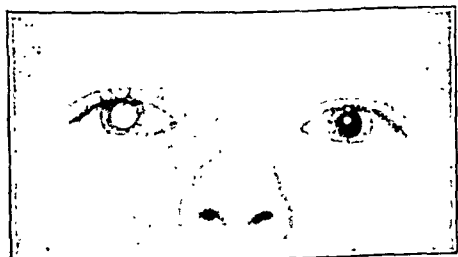


Fig. 7.—R. W., a boy aged 3 years; retinoblastoma: the pupil is dilated, the globe of normal size.

hereditary nature of this tumor has been indicated by several authors including Wells,⁷ who has stated: "The hereditary factor seems to be particularly important in tumors of the retina as compared with tumors of other nerve tissue."

In more than half the 48 cases at Memorial Hospital the retinoblastoma was bilateral. There may be an interval of some years before the second eye becomes affected, although usually it is evident when the patient is first examined or within several months thereafter.

Diagnosis: The tumor is diagnosed by the presence of a peculiar pupillary reflex (gray, green, white, glassy, red); the dilated pupil; squinting, and visual impairment because of which the child turns his head to use the good eye. There is apparent awkwardness in the use of the arms, and if the child is old enough to walk he stumbles and runs into objects.

Differential Diagnosis: Retinoblastoma is to be differentiated from other congenital ocular lesions, such as cataract, coloboma and tunica vasculosa lentis (retrolental fibroplasia). These anomalies are often associated with other defects: the globe may be microphthalmic, and the pupil may be contracted rather than dilated.

Retinoblastoma must also be differentiated from infections, such as pseudoglioma (organized exudate in

the vitreous), confluent tubercle, retinitis and histoplasmosis. The usual associated clinical characteristics and the history, both prenatal and postnatal, will aid in differentiation.

Treatment of Retinoblastoma: If the disease is unilateral, prompt enucleation of the eye must be accomplished. If bilateral, the eye that is more involved is



Fig. 8.—R. F., a boy aged 9 years; tunica vasculosa lentis; the pupil is contracted, and microphthalmia is present.

removed. The decision with regard to the remaining eye requires fortitude on the part of the parents. They may choose to have it removed or may prefer to have it treated by irradiation. No generalities are suitable in this disease, and each case must be decided as an individual problem.

Prognosis: Among 9 patients with bilateral retinoblastoma treated at Memorial Hospital by surgical means and by irradiation, 6 survived five years or longer, 2 with vision.⁹

The course of the disease may progress regardless of the type of treatment, and if it is unchecked it generally results in widespread metastases. Late radiation sarcoma has been observed after radiation therapy for retinoblastoma.⁹

Orbital Sarcoma.—Orbital sarcomas may be observed in early infancy as well as later in childhood. They arise from any soft orbital tissue, frequently from muscle tissue (fig. 9).



Fig. 9.—C. S., a girl aged 6 weeks; orbital sarcoma.

Diagnosis: The progressive or persistent orbital swelling with or without proptosis or conjunctival changes should be considered as a possible tumor.

Treatment: The tumor and globe are removed. Irradiation is often used postoperatively.

Prognosis: Most of the orbital sarcomas are highly malignant and have an unfavorable prognosis.

8. Wardrop, J.: Observations on Fungus Hematodes. Edinburgh. A. Constable, 1809.

9. Martin, H. E., and Reese, A. B.: Treatment of Bilateral Retinoblastoma (Retinal Glioma) Surgically and by Irradiation, Arch. Ophth. 33: 429 (June) 1945.

TUMORS OF LYMPHATIC AND BLOOD-FORMING
ORGANS

Leukemia, lymphosarcoma and Hodgkin's disease are included among the neoplasms of lymphatic and blood-forming organs observed in children. Mycosis fungoides is also classified among these diseases, but



Fig. 10.—A. A., a girl aged 12 years; reticulum cell lymphosarcoma; she has survived seven years following the surgical removal of the tumor.

it is of doubtful occurrence in the age period being considered.

Leukemia.—Leukemia is one of the principal causes of death from neoplastic diseases in children. The diagnosis can seldom be made early, because there may be no symptoms or signs and the peripheral blood may be normal. The classic signs of adenopathy, splenomegaly, hepatomegaly, purpura and pathognomonic evidence in specimens of peripheral blood are indications of advanced disease.

Leukemia frequently simulates other diseases, such as respiratory infections and adenitis. Large leukemic infiltrations in the thorax or abdomen may suggest tumors of other histologic varieties. It has long been recognized that in many patients whose biopsy was believed to indicate a lymphosarcoma there may subsequently develop the hematic characteristics of leukemia. Since the use of antibiotics and the resultant prolongation of the lives of many patients with leukemia by the prevention of death from intercurrent infection, such instances will probably be more widely noted. From Jan. 1, 1946 to June 1, 1947 there were 5 children treated in the Pediatric Service at Memorial Hospital who had a biopsy diagnosis of lymphosarcoma. In 4 of these, the studies of the peripheral blood or the sternal marrow revealed evidence of leukemia.

Acute leukemia is the usual variety of the disease in children. Because of the difficulty of distinguishing between the immature cells of the myeloid or lymphoid group, more detailed classification is usually omitted. Chronic myeloid leukemia occasionally occurs in childhood, but it is doubtful that chronic lymphatic leukemia does. Another rare variety is eosinophilic leukemia.

Diagnosis: The clinically diagnostic features of this disease are well known. The peripheral blood in acute forms of leukemia exhibits anemia; leukocytosis (which is common but variable) and, somewhat less often, leukopenia; thrombocytopenia; young polymorphonuclear cells, and numerous mononuclear cells of the nongranular variety.

The most satisfactory and accurate aid in the diagnosis, the differential diagnosis and the study of remissions and course of the disease is the examination of the sternal marrow smear. This procedure¹⁰ is valuable and should be included in the investigation of any obscure or undiagnosed disorder.

Roentgenograms at times reveal periosteal reaction and osteolytic defects, but more commonly they exhibit only an area of rarefaction below the diaphyses of the tibia and femur.

Treatment: The use of radioactive isotopes in leukemia in children at Memorial Hospital did not give encouraging results and has been discontinued. Urethane was used in 2 cases. A more palliative effect was noted in 5 patients in whom nitrogen mustard was used. Many institutions throughout the world are pursuing clinical investigations with these and other chemicals, but the results cannot be completely evaluated at this time.

Hodgkin's Disease.—The clinical appearance of large masses of lymph nodes, particularly in the neck, axillas and inguinal regions in Hodgkin's disease is well known.

Diagnosis: The diagnosis must be made by biopsy.

Differential Diagnosis: Adenopathy from infectious causes as well as from other types of tumors must be



Fig. 11.—M. G., a girl aged 4 months; extensive hemangioma of face; the distribution is almost completely right-sided.

differentiated from Hodgkin's disease. Difficulty may be experienced in histologic differentiation between lymphosarcoma or benign lymphoma and Hodgkin's disease.

10. Smith, C. H.: Bone Marrow Examination in Blood Disorders. *M. Clin. North America* 31:525 (May) 1947.

Prognosis: Hodgkin's disease terminates fatally, but palliative roentgen therapy is possible and may prolong life for several years.

Lymphosarcoma.—During childhood lymphosarcoma occurs oftener in the tonsil, nasopharynx and lymph nodes than in other lymphatic structures.



Fig. 12.—A. S., a girl aged 6½ years; rhabdomyosarcoma of the thumb; the tumor has been present since infancy.

Diagnosis: Persistent adenopathy or intrathoracic and intra-abdominal masses indicate that a biopsy is required.

Differential Diagnosis: The difficulties in the histologic differentiation of a lymphosarcoma from other varieties of lymphoma and at times from neuroblastoma are familiar to most pathologists.

Treatment and Prognosis: The prognosis is generally unfavorable. It is believed that if the tumor is localized and can be surgically extirpated the prognosis might be improved. One child treated in this way at Memorial Hospital has survived more than seven years (fig. 10).

TUMORS OF SOFT SOMATIC STRUCTURES

Hemangioma.—One of the commonest tumors observed in white children, although extremely rare in the Negro, is the hemangioma.

Diagnosis and Differential Diagnosis: The hemangioma may be diagnosed readily if it is cutaneous in location. If it is subcutaneous, visceral or osseous, the tumor must be differentiated from other tumors and nonneoplastic disorders of those sites.

Visceral hemangiomas occur at times in association with cutaneous lesions. Infrequently they are present in the absence of external lesions, and it is therefore important to realize that death may result from hemorrhage, pressure or serious interference with function in the locality affected even though tumors are not externally evident.

Treatment of Hemangiomas: The practice of waiting for spontaneous or traumatic thrombosis to produce regression is not invariably satisfactory. Although many hemangiomas regress in this manner, some may

produce severe disfigurement (fig. 11) or serious functional defects if they are permitted to grow.

The development of hemangioma in an infant during the first few weeks of life requires close, almost daily, supervision to estimate the rapidity of growth. Usually hemangiomas which appear in this early period rapidly increase in size. This may be due not so much to growth of the tumor as to the gradual engorgement of a neoplasm whose pattern was established prenatally.

Cauterization with carbon dioxide snow is a simple and satisfactory method of treating many capillary hemangiomas. Surgery and radiation therapy may be required for the treatment of certain hemangiomas, particularly of the cavernous, racemous and hypertrophic varieties.

Lymphangioma.—Lymphangioma is not common. It is usually observed in its soft cystic form in the neck or thoracic region (hygroma cysticum coli). It may also diffusely infiltrate to the subcutaneous tissue or appear in the skin itself as localized cysts. Mesenteric cysts are of lymphangiomatous nature.

Surgery appears to offer the best prognosis. The operative problem in some cases of hygroma, however, is formidable.

Tumors of Fat, Muscle and Nerve.—Tumors may arise in any subcutaneous structure. They appear usually as painless, silent swellings and therefore in many cases are considered to be hematomas. With few exceptions any nontraumatic swelling should suggest



Fig. 13.—V. S., a boy aged 1½ years; lipoma, an uncommon tumor in childhood: a small mass was noted at 7 months; the mass grew to the size illustrated within eleven months.

cancer. Any traumatic swelling that does not regress in the usual time and manner should be considered to be cancer unless clinical characteristics or, preferably, biopsy results prove otherwise. A solid tumor may be transilluminated almost as well as a cyst.

Operative removal of the tumor is the recommended treatment.

TUMORS OF THE NERVOUS SYSTEM

Neoplasms of the brain, intracranial structures, sympathetic nervous system, spinal cord and peripheral nerves comprise a large group of common benign and malignant tumors.

Intracranial Tumors.—As might be expected, there are many histologic varieties of intracranial tumors.

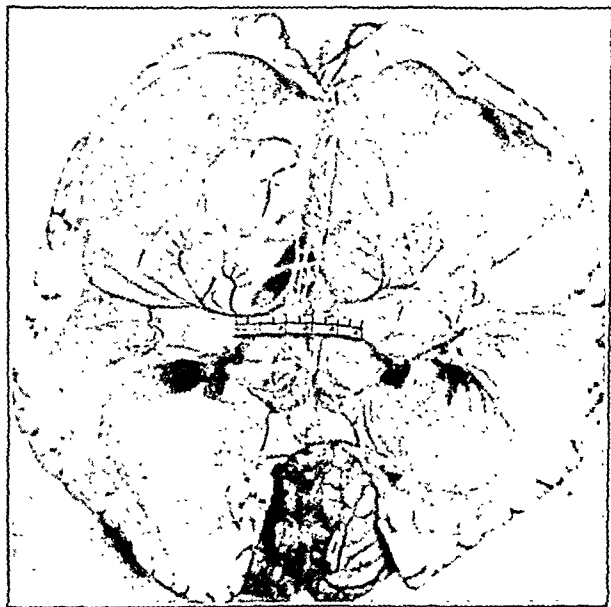


Fig. 14.—K. S., a boy aged 7 years; severe hydrocephalus from effects of cerebellar astrocytoma.

The commonest are the astrocytoma, medulloblastoma, craniopharyngioma, meningioma and ependymoma. The tuberculoma is encountered in the United States with diminishing frequency.

In children most intracranial tumors are subtentorial, whereas in the adult supratentorial growths predominate numerically. The symptoms produced depend on the site affected and the degree of intracranial hypertension produced. This seems obvious until it is recalled that in the infant and young child the easily expandable head may permit a tumor to develop for a prolonged period before any signs or symptoms are evident.

The symptoms of intracranial hypertension are familiar: headache, vomiting (especially early morning or unrelated to ingestion of food); sometimes nausea, papilledema, and Macewen's sign (cracked pot resonance on percussion of the skull). In what might be considered the initial phases of the disease diagnosis is difficult. The earliest indications are slight and are usually forgotten by the parents or patient until memories are refreshed some time after the diagnosis has been made.

Tumors of the Posterior Fossa.—Tumors of the posterior fossa are most frequently medulloblastoma or astrocytoma. Ependymoma of the fourth ventricle is also not uncommon.

Cerebellar symptoms may precede or follow signs of intracranial hypertension. Such symptoms are ataxia, in which the child may walk on a wide base; vertigo, and nystagmus. Hypotonia is frequent after the disease has progressed. The knee jerks are diminished or are absent. Some involvement of the cranial nerves may be noted if compression of the brain stem occurs. If the neoplasm expands the posterior fossa, the inion

may appear on the roentgenogram to be higher than normal in relation to the atlas. Ventriculograms usually disclose dilated lateral ventricles.

Lumbar puncture should not be performed when there are indications of tumor of the posterior fossa or of intracranial hypertension from any cause.

Supratentorial Tumors: Craniopharyngioma (Rathke's Pouch Cyst).—The craniopharyngioma is one of the most frequently described intracranial tumors of childhood. It is a cystic tumor arising from the stomodaeum. Because of its location in the suprasellar region it produces a variety of symptoms.

Diagnosis: In addition to the symptoms of intracranial hypertension, which are almost always present, visual difficulties and optic atrophy, hemianopsia and somatic changes, such as obesity, pubertas precox and infantilism, are of frequent occurrence. Psychic changes are not uncommon.

The diagnosis may almost always be confirmed with certainty if roentgenographic evidences of separation of the sutures, increased definition of digital markings, crystalline shadows in the suprasellar areas and, frequently, destruction of the clinoid processes are demonstrable.

Differential Diagnosis of Intracranial Tumors: (1) Congenital hydrocephalus is usually present at birth and is progressive. (2) Subdural hematoma and (3) pachymeningitis hemorrhagica are diagnosed by aspiration of the contained serous or serosanguinous fluid. (4) Encephalitis may be difficult to diagnose if the evidence is inconclusive. Repeated investigations may be necessary before the possibility of tumor can be excluded. (5) Lead encephalopathy is also at times difficult to differentiate. The lead lines observed in the bones roentgenographically and occasionally the history are helpful. The gingival condition is usually normal, and there is frequently no basophilic stippling of the red cells, or anemia. The urine will contain lead in quantitatively significant amounts.

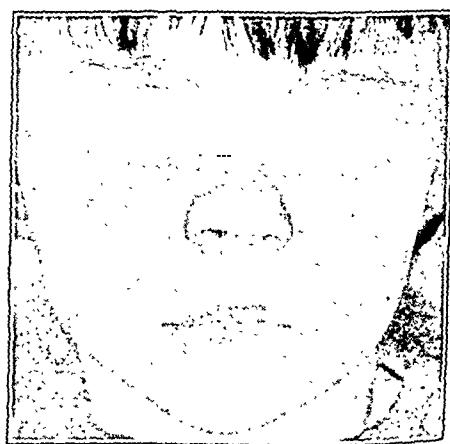


Fig. 15.—M. B., a girl aged 3½ years; neuroblastoma: the primary tumor was a dark nodule near the right nasolabial fold.

Because of the many types of cerebral structures affected by neoplastic diseases, many erroneous diagnoses are made. Principal among these are gastrointestinal disorders, behavior problems and chorea.

Treatment: Surgery is indicated in almost all intracranial tumors. Tumors of the brain stem are inoperable. Irradiation is used postoperatively in

medulloblastoma and sometimes in certain nonmalignant varieties, such as hemangioma.

Prognosis: Although the craniopharyngioma is histologically benign, the prognosis must be guarded because of the proximity to important cerebral structures.

Approximately one third of all intracranial tumors in childhood are curable if treatment is instituted before irreparable injury to the brain has occurred.¹¹

Tumors of the Spinal Cord.—Tumors of the spinal cord are uncommon in childhood. The tumor may arise outside of the cord and affect it either by invasion or by pressure. Many types are described: sarcomas, dermoids, lipomas and neurinomas.

Diagnosis: The symptoms are usually bilateral, but not invariably so. The symptoms at the level of the lesion are segmental pain and other sensory disturbances. Muscular atrophy may also occur. The signs below the level of the disease consist of both motor and sensory disorders which become progressively worse until little motor activity is present and sensation is completely lost.

The spinal fluid is often yellow and may clot on standing. Jugular compression does not increase the pressure of the spinal fluid. Roentgenograms, particularly by means of myelography, will often show the lesion.

Differential Diagnosis: Chorea, poliomyelitis, tuberculous spondylitis and the Guillain-Barré syndrome have been confused with cord tumors but may be differentiated by the usual confirmatory characteristics in the presence of these diseases.

Treatment: If feasible, surgical removal is the treatment. Palliative irradiation is indicated for lymphomas and extradural sarcomas.

Sympathetic Nervous System: Neuroblastoma.—The neuroblastoma is one of the more frequently observed cancers of the nervous system. It arises from the sympathetic neuroblast. The most commonly described site is the adrenal medulla, but it is probable that this is only one of many primarily involved tissues. Thirty-eight cases in children have been observed at Memorial Hospital. In 12 of these the sites of the primary tumors were believed on autopsy to be as follows: adrenal, 8; cervical sympathetic chain, 1; right sciatic nerve, 1; presacral area, 1, and periorbital tissues, 1.

Diagnosis: Unfortunately, a neuroblastoma is seldom recognized before it has metastasized to the skull, liver, lungs or bones, because the primary site may be small. Although clinical and roentgenographic observations may be suggestive, biopsy is necessary.

Differential Diagnosis: In some instances it is not easy to differentiate between neuroblastoma and lymphosarcoma. Neuroblastoma is to be considered in the differential diagnosis of any mass in the flank or the posterior mediastinum. In 1 case it was observed that the primary site was apparently the cheek, and in another the thigh was first affected.

Treatment: Treatment is by extirpation of the primary tumor, and by radiation if metastases are not extensive.

Prognosis: There have been some cases reported¹² of survival five years after treatment. Usually, however, the prognosis is grave.

Ganglioneuroma.—The ganglioneuroma is a benign tumor which has been noted in early infancy as well as in the run-about child. It usually is found intrathoracically or retroperitoneally. It may reach huge proportions.

Diagnosis: In the diagnosis of any posterior mediastinal or retroperitoneal mass the ganglioneuroma must be considered a possibility. Usually the existence of the tumor for a duration of months to years without the occurrence of metastases is helpful in the differentiation of neoplasms in these sites.

Treatment and Prognosis: Treatment is by extirpation. The prognosis is favorable.

Pheochromocytoma.—Pheochromocytoma is a curious and rare tumor of nerve origin and is suggested when hypertension is present with or without signs of a mass in the flank or abdomen.

Surgical removal has been attended by shock. Great care must be exercised during the operation to prevent vascular collapse.

Neurosarcoma.—Some sarcomas of the soft parts originate in the peripheral nerves. These tumors start, as do their benign counterparts, as small subcutaneous nodules which may cause no subjective symptoms and may not enlarge rapidly.

Diagnosis: The clinical diagnosis is usually made as "soft part tumor."

Treatment: The nature of most of these masses is interesting to speculate about, but the correct management demands a prompt and complete excision if this is possible. If this cannot be done a biopsy should be performed so that the diagnosis may not be doubtful.

Prognosis: There are authenticated cures of neurosarcoma.

Neurofibroma and Neurofibromatosis.—There is an extensive literature concerning this interesting group of hereditary neoplasms, neurofibromas and neurofibromatosis. The tumors may be single or multiple and may be intracutaneous or subcutaneous. The lesions associated with neurofibromatosis are numerous. Café au lait spots are usually present in quantities. Personality defects and mental retardation may also be present. One of the patients at Memorial Hospital, a boy aged 9 years, has gynecomastia and an increase in follicle-stimulating hormone.

Diagnosis: There is usually no difficulty in diagnosis when multiple stigmas are present, as they usually are in neurofibromas and neurofibromatosis. Osseous changes in the vertebral column have been observed in children who demonstrated nothing externally but a few small café au lait spots.

Treatment: Inasmuch as about 15 per cent of all neurofibromas may undergo cancerous changes, the removal of accessible tumors is indicated. The deeply situated growths, in the thorax, for example, may be so diffuse as to preclude their complete removal.

Nevi: Neuroncervus (Pigmented Mole) and Melanoma.—The pigmented mole is commonly observed. Unless it is of great size, is growing rapidly or is

11. Bucy, P. C.: Personal communication to the author.

12. Farber, S., in Nelson, W. E.: *Mitchell-Nelson's Textbook of Pediatrics*, ed. 4, Philadelphia, W. B. Saunders Company, 1946.

subject to trauma, it may be left alone. The melanoma is a cancer. Clinically malignant melanoma is exceedingly rare before puberty. Histologically cancerous alterations may begin at any time during or after puberty. Thorough removal as early in life as possible is imperative.

Teratomas, Teratoid Tumors and Dermoid Cysts.—Teratomas, teratoid tumors and dermoid cysts are complex tumors of embryonal origin, which occur at many sites: the sacrococcygeal region, the brain, thorax and abdomen.

Diagnosis: There may be little difficulty in diagnosis if the tumors occur at or near the surface of the body; however, if they are situated in a bodily cavity, they must be differentiated from any other mass which might occur at that site.

Treatment: Treatment is by surgical excision. The operative time of choice is not always simple to decide. An extensive surgical procedure cannot be tolerated by many infants. There is risk in delaying the operation inasmuch as an estimated 3 to 45 per cent of the tumors of this type are or will become cancerous.

Topographic Distribution in Five Hundred and Six Cases of Childhood Cancer

Bones	137
Blood-forming and lymphoid structures.....	107
Peripheral sarcomas: muscle, fat or nerve.....	107
Eye and orbit.....	62
Genitourinary	34
Pharynx	27
Gynecologic	12
Salivary glands and thyroid.....	9
Miscellaneous	5
Skin	3
Lip	2
Central nervous system.....	1

From the Children's Department, Memorial Hospital, 1921 to 1947.

Prognosis: The prognosis is variable, as would be expected; it depends on the histologic type, the size and the location of the tumor.

PROPOSALS FOR CANCER CONTROL IN CHILDHOOD

The need for collaboration in the study of tumors in children has been recognized by all those engaged in this field. The American Academy of Pediatrics has endorsed such a coordinated study as part of its national child health program, by the establishment of a Children's Tumor Registry. The combined experience of various clinics is required to evaluate results, incidence and diagnostic criteria, because the type of tumors observed in each hospital may vary considerably.

The satisfactory control of any disease requires the application of preventive measures, if available, or an aggressive therapeutic attack before the disease has progressed beyond the period of possible cure. Some prophylactic measures for childhood cancer are outlined in succeeding paragraphs.

The success of the methods now employed in treatment is determined not alone by the capabilities of the surgeon and radiotherapist but also by the rapidity with which they are permitted to institute treatment for a potentially curable neoplasm. Therefore the outcome of the curable case depends largely on how early it is recognized and how promptly treatment is started.

No member of the entire group of physicians concerned with the problem of cancer in children—the

surgeon, radiologist, pathologist, pediatrician or health officer—is more important than the family physician, who usually sees the patient first and whose opinion and recommendations are the basis for the family's decisions.

Therapy, with certain modifications, has been relatively standardized; consequently, many localities in the country now offer proper treatment. The current necessity is for greater attention to earlier diagnosis.

A satisfactory cancer program for children should include (1) periodic health examinations; (2) excision or biopsy of swellings as indicated; (3) excision of potentially cancerous growths; (4) systematic clinical investigations, and (5) a revision of the attitude toward benign tumors.

1. *Health Examinations.*—The periodic health examination should take place monthly from birth to 1 year of age, quarterly from 1 to 6 years and semiannually thereafter. In this examination a roentgenogram of the thorax and a complete blood count in addition to other pediatric routines should be included.

2. *Excision or Biopsy of Swellings.*—Excision preferably, or biopsy, should be done of any suggestive swelling which is (a) of traumatic origin but of unusual duration or otherwise different from the frequent hematomas of childhood or (b) of nontraumatic origin, except enlargements of organs, such as the breasts and testes, associated with the growth of the girl or boy, and gynecomastia.

3. *Excision of Growths.*—Excision of potentially cancerous growths, such as melanoma, teratoma, dermoid and neuroma, should be accomplished as soon as possible.

4. *Investigation.*—A disorder that appears to satisfy all but a few of the criteria of a common disease may be cancer. Investigation and even repeated investigations, therefore, should be routine in the presence of (a) an atypical symptom complex or (b) an unusual child patient, especially the precocious or retarded child, if the departure from his norm has been increasingly apparent or if the child has periodic vague illnesses with phases of normal health between attacks.

Observation of the child with an unusual growth or retardation of growth of the body as a whole or some of its members should suggest to the physician the possible presence of a neoplasm. The child who is a behavior problem may likewise have a neoplasm. The necessity for eliminating the possibility of organic nervous disease in behavior problems has been repeatedly stressed by psychiatrists and psychologists engaged in this field as well as by neurologists.

5. *Revision of Attitude Toward Benign Tumors.*—A revision in the attitude toward benign tumors is imperative. Any neoplasm, regardless of its histologic structure, may cause death if its size, rapidity of growth, anatomic location or interference with function seriously disturbs vital activities. There are many examples of grave benign tumors, the most striking of which are the intracranial tumors. These are for the most part histologically benign, but they involve such important structures that they result in a high mortality.

The term benign tumor is therefore in many cases prognostically misleading to the patient and at times to the physician, unless all the implications of a tumor so designated are thoroughly understood.

119 East Eighty-Fourth Street.

Clinical Notes, Suggestions and New Instruments

DEATH FOLLOWING ACCIDENTAL INGESTION OF DDT

Experimental Studies

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Wadsworth, Kan.

DDT (1,1,1-trichloro-2,2-bis[*p*-chlorophenyl]-ethane) has recently become widely used in readily available commercial insecticides. Therefore, this chemical has added to the list of protoplasmic poisons which do not produce detrimental effects when used as intended,¹ but may be extremely harmful, and even lethal, when ingested accidentally or with suicidal intent. A case of accidental fatal poisoning by ingestion of a commercial DDT preparation was observed recently, which came to autopsy six and one-half days after drinking the poison. Other instances of accidental DDT intoxication undoubtedly will occur as long as these preparations are available commercially, and thus an investigation into the toxic effects of one of these commercial insecticides should be of interest.

REPORT OF CASE

Mr. B, age 58, a white laborer, had been in good health until Aug. 1, 1946. On the afternoon of that day he drank, accidentally, 120 cc. of a 5 per cent solution of DDT. He immediately realized his error and drank a quart of milk within a few minutes after swallowing the poison. The patient then drank several glasses of beer.

Within an hour of the accident he noticed the onset of severe epigastric pain, and he vomited copious amounts of "coffee ground-like" material. These symptoms continued with increasing severity, the episodes of emesis occurring every thirty to sixty minutes for the following several hours. The vomitus varied in color from dark brown to bright red. Thirty-six hours after drinking the DDT preparation, the patient was still vomiting frequently and began having involuntary spastic contractions of his fingers and wrists.

On August 3 an osteopath was called who gave some unknown hypodermic medication and other medication to be taken every thirty minutes in a glass of milk. None of the latter was retained. His symptoms of epigastric pain, repeated emesis and some abdominal distention continued until August 6, when he was admitted to the Veterans Administration Center, Wadsworth, Kan. At the time of admission he had passed no urine since two hours after ingesting the DDT mixture six days before and had had but two tarry black stools during this time. The patient complained of thirst, but any attempt to take water by mouth was followed by an emesis of brown blood-stained vomitus.

On physical examination the patient was a small, well developed white man of 58 years who appeared acutely ill. His temperature was 99.6 F., respirations 25 per minute, and pulse rate 66 per minute. The blood pressure was 180 systolic and 72 diastolic. Other positive physical findings were confined to the abdomen and nervous system. There was some distention of the abdomen. The upper quadrants were rigid and tender to palpation, with the liver palpable 2 cm. below the costal margin at the midclavicular line. The pupils were unequal and did not react to light or accommodation. The patellar, abdominal and cremasteric reflexes were not present. No pathologic reflexes or clonus were elicited. The extremities had normal muscle tone; there were no tremors.

From the Department of Pathology, Veterans Administration Center, Wadsworth, Kansas.

The photomicrographs used in figures 1 and 2 were furnished by the Army Institute of Pathology.

Dr. F. C. Helwig, Consultant in Pathology, Wadsworth Veterans Center, Wadsworth, Kan., made many fine suggestions in the preparation of this report.

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J. Angley, J. C.: *Air Surgeon's Bull.* 2:77-78 (March) 1945. Draize, J. H.; Woodard, G.; Fitzhugh, O. G.; Nelson, A. A.; Smith, R. B., and Calvery, H. O.: *abstracted, Bull. Hyg.* 20:213 (April) 1945.

Laboratory data at the time of admission showed the erythrocyte count to be 3,120,000 with 78 per cent hemoglobin. The total leukocyte count was 11,600. The nonprotein nitrogen was 150 mg. per hundred cubic centimeters. The patient was catheterized, and 300 cc. of straw-colored urine was obtained. The pH was 7.0, specific gravity 1.012, albumin 1 plus. The reactions for sugar, acetone and diacetic acid were negative. Microscopic study showed 3 to 8 white blood cells per high power field and an occasional granular cast.

The patient was given 1,000 cc. of 10 per cent glucose in isotonic solution of sodium chloride soon after admission on August 6. He continued to have repeated episodes of hematemesis and six hours after admission began to perspire profusely and to become comatose. On August 7 his condition had not improved. He had several black tarry stools and repeated episodes of hematemesis. He continued in deep coma and coarse moist rales developed at the bases of both lungs. The blood pressure fell to 110 systolic and 60 diastolic, and the pulse became rapid (120 per minute). The patient died at 10:15 p. m. August 7, thirty hours after admission.

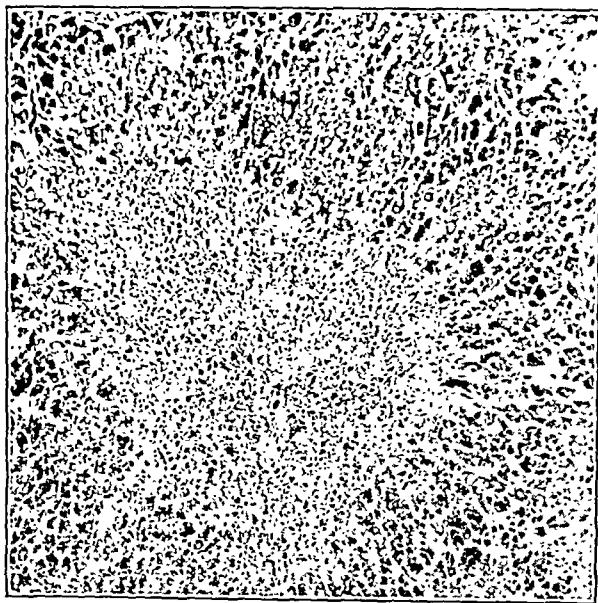


Fig. 1.—The central portions of all of the hepatic lobules show extensive necrosis with complete destruction of the parenchymal cells. The few viable cells remaining about the portal areas have undergone extensive fatty degeneration.

NECROPSY

Necropsy was performed sixteen hours after death and eight hours after the body had been embalmed. The body was that of a 58 year old white man, 5 feet 4½ inches (163.8 cm.) in length, weighing approximately 120 pounds (54.4 Kg.). There was definite rigor mortis and livor mortis present. The abdomen was slightly distended.

The heart was removed and weighed 220 Gm. The coronary vessels were sectioned serially, and several large atheromatous plaques were present. The vessels were patent throughout their course. The lungs were removed and weighed 1,350 Gm. Section through the pulmonary parenchyma revealed a uniform, dark red surface from which a large amount of blood-tinged fluid exuded. The liver weighed 1,550 Gm. Its surface showed no change, but on cut section the parenchyma presented a yellow-brown surface studded with pinpoint hemorrhagic and necrotic-appearing foci. This picture was uniformly present throughout the entire organ in both right and left lobes. The stomach contained 400 cc. of thin, brown, blood-tinged fluid. The mucosa was decidedly hyperemic, with many small submucosal hemorrhages grossly visible. In the first portion of the duodenum, a well healed old ulcer was present measuring 1.5 by 2.0 by 0.5 cm. The right kidney weighed 220 Gm. Its capsule stripped with ease, and a smooth surface, pale yellow in color, was present. On section the very pale cortex con-

trasted sharply with the dark red medullary portion. The left kidney weighed 210 Gm., and it appeared similar to its fellow. The ureters were normal. The urinary bladder contained only 50 cc. of clear urine. The meninges were not altered, and the cerebrospinal fluid was clear. The brain weighed 1,420 Gm. Serial sections through the cerebral hemispheres, cerebellum and brain stem revealed no gross lesions.

Sections from representative areas of all the organs were examined, and the following changes were observed. In the lungs the alveoli were found to contain many large pigment-laden phagocytes, and in occasional areas peribronchial pneumonia was seen. A section of the myocardium showed many small areas of perivascular scarring and myofibrosis. The intima of the aorta was thickened, and in the media and adventitia changes of syphilitic aortitis were found. The liver was the site of an extreme toxic change (fig. 1). The central portions of all the lobules showed extensive necrosis with complete destruction of all parenchymal cells, leaving only a few reticular fibers, bile-stained cell fragments and occasional extravasated erythrocytes. The few viable cells remaining about the portal areas had undergone extensive fatty degeneration, with large lipid

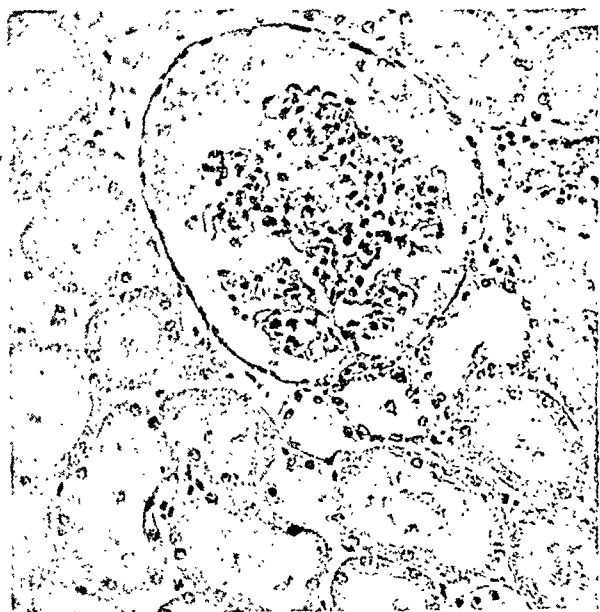


Fig. 2.—The renal tubules are the site of extensive degenerative change. Abundant acidophilic and bile stained debris as well as hyaline droplets fill the lumen.

vacuoles in the cytoplasm of many of the cells. The cells remaining intact showed considerable variance in structure. Several small vacuoles were all that remained of the cytoplasm in some cells, while others were swollen, with a coarsely granular, deep-staining cytoplasm which often contained small deposits of bile. All were enlarged and distorted, and they varied greatly in size. The structures in the portal areas were unaltered. The kidney tubules showed extensive changes which were most conspicuous in the proximal convoluted tubules, but extensive damage, even into the distal convoluted and collecting tubules, was present (fig. 2). The tubular epithelium was the site of many types of degeneration and necrosis. The lumen of the tubules in these areas contained abundant acidophilic and bile-stained debris, with many hyaline droplets also present. With the atrophy and degeneration of the tubular epithelium, the lumen of the tubules appeared greatly enlarged with well formed hyaline and granular appearing casts frequently seen. Some evidence of regeneration of the destroyed epithelium from remaining basilar portions of the cells was seen in many areas. These severe toxic changes were found to uniformly affect all sections of the kidney. In the glomeruli the vascular apparatus was unaltered. Bowman's space contained many shreds of coagulated protein material and swollen sloughed epithelial cells. In sections from both kidneys a few small arteriosclerotic scars were found.

The final diagnosis was toxic hepatitis, toxic tubular degeneration of the kidneys, syphilitic aortitis, healed duodenal ulcer, generalized arteriosclerosis, coronary arteriosclerosis with myofibrosis, and bronchopneumonia.

EXPERIMENTAL DATA

An attempt was made to ascertain the role which DDT played in production of the lesions observed in the case reported here. The York Pharmacal Company, manufacturer of the insecticide ingested by the patient, was very cooperative and furnished samples of their product. These constituents were present in the following proportions:

D.D.T.	5 %
"Lethane" (384 special)	2 %
Xylene	7 %
Deodorized kerosene	86 %

To determine the effect of each of the four constituents in production of the specific changes found, rabbits were given doses of the insecticide and of each of the four ingredients by gastric tube. The dosage was calculated in each instance to be in proportion to the relative body weight. The animals were killed at 6.5 days, the duration of the patient's course after ingesting the poison. Below is a summary of the findings.

Two rabbits were given the original insecticide mixture. The kidneys in both animals were affected with a severe toxic tubular degeneration, and in the liver an extensive centralobular toxic change was seen. Proportionate amounts of xylol and "lethane" each were given to 2 rabbits and the animals killed in the specified time. No changes were noted in either the liver or kidneys. When a rabbit was given the calculated dosage of deodorized kerosene, many stages of tubular degeneration were seen microscopically in the kidneys, and the liver was the site of rather pronounced parenchymatous damage. Five per cent DDT in cod liver oil was given to 2 rabbits and produced a toxic tubular degeneration in the kidneys, although not as great as that seen in the animal poisoned with kerosene. The damage to the liver was more striking, however, with an actual central necrosis seen in some lobules in the liver sections. One animal poisoned with a 5 per cent solution of DDT in deodorized kerosene showed the most extensive hepatic and renal damage. In rabbits poisoned by the insecticide and in those given 5 per cent DDT in kerosene, the lesions closely simulated those noted in the patient studied.

The factor of alcohol ingestion was ignored in pursuing these studies, inasmuch as no information was available as to the amount and exact time the patient drank the quantity of beer mentioned in the history. The possibility of alcohol increasing the susceptibility of tissues to a parenchymatous poison, such as is seen in carbon tetrachloride intoxication, is a factor to be considered.

From these limited studies one would be led to believe that the commercial insecticide mixture in question contained adequate amounts of two chemicals, kerosene and DDT, to produce severe hepatic and renal damage. DDT apparently was the factor of prime importance. These studies might also suggest a possible synergistic action when DDT and kerosene are combined.

COMMENT

I have found in the literature only 2 deaths resulting from DDT intoxication. The first case, reported by Hill and Robinson,² was that of a 19 month old infant who died within four hours after ingesting 30 cc. of a 5 per cent mixture of DDT in kerosene. Terminal pulmonary edema was the only pathologic lesion demonstrable. Hill and Damiani³ reported a second case of fatal poisoning occurring in a man aged 47. Symptoms of intoxication began twenty-four hours after working in a room which had been sprayed with a solution of 6 per cent

1a. "Lethane" (384 special) is a liquid insecticide concentrate containing 12.5 per cent by volume beta-butoxy-beta'-thiocyanodiethyl ether and 37.5 per cent by volume beta-thiocyanooethyl esters of aliphatic acids containing 10 to 18 carbon atoms, standardized with petroleum distillate. A review of the toxicology of this substance by W. D. Murphy in *J. Agr. Med.* 1937, states that the substance is nontoxic in warm-blooded animals in amounts used in commercial insecticides.

2. Hill, K. R., and Robinson, G.: *Brit. M. J.* 2: 845-847 (Dec. 15) 1945.

3. Hill, W. R., and Damiani, C. R.: *New England J. Med.* 235: 897-899 (Dec. 19) 1946.

DDT in kerosene. Lesions simulating periarteritis nodosa were found at autopsy. These workers suggest that DDT possesses allergic properties similar to the sulfonamide compounds and certain iodides which have been found capable of producing a hypersensitive state.

The case reported here appears to be unique in that, although the patient ingested lethal quantities of a poisonous mixture containing DDT, he lived for 6.5 days and sufficient time was allowed for the development of demonstrable lesions in the affected organs. Heretofore only in animal experiments have opportunities for the study of these changes been available. Lillie and Smith,⁴ Cameron and Burgess,⁵ Nelson and others⁶ and Woodard and his co-workers⁷ have all carried out such studies in extensive animal experiments. Animals ingesting DDT in single large doses, as well as in repeated small doses, have shown a constant histopathologic picture with hepatic and renal degeneration. The changes described are not unlike those observed in this case with a severe centrilobular necrosis and degeneration in the liver and varying types of tubular damage in the kidneys.

In addition to changes in the liver and kidney, other less constant changes have been observed in some of the animals studied. Cameron and Burgess⁵ have noted occasional fatty infiltration and even focal necrosis in some of the fibers in sections of striated muscle. Mucosal gastric hemorrhages also have been seen in some animals given large oral doses of DDT.⁶ Lillie and Smith⁴ found a partial tyroglysis with pericellular vacuolation in the anterior horn of the spinal cord in some cats in their series. However, other workers⁸ have reported no demonstrable lesion in the brain or spinal cord, and neither of the two recorded human autopsies has revealed any change in the central nervous system.

The clinical manifestations of DDT intoxication, as have been reported in nonfatal cases, are based chiefly on the neurotoxic action of the chemical.⁹ The patient studied by Wigglesworth¹⁰ suffered from extreme nervous tension, mental anxiety and heaviness and aching of the extremities. Case and his co-workers¹¹ experienced identical symptoms when they exposed themselves to DDT for forty-eight hours in a room which had been painted with a paint containing DDT. However, in the case reported here, the severe gastrointestinal symptoms and the onset of coma so predominated in the patient's clinical course that he was unable to give an account of any less striking symptoms. It was also impossible to examine the urine or feces for DDT or bis(p-chlorophenyl)-acetic acid (DDA) as had been done in animals and in one case reported by Stohlmán and Smith.¹⁰ Moreover, we did not determine the presence of DDT in any tissues or body fluids, as has been done by Stiff and Castillo.¹¹

With the increasing use of DDT insecticides by the general public, it is not unlikely that occasional cases of poisoning from its accidental ingestion will be encountered. The experience with the case reported here would indicate that degenerative lesions in the liver and kidney similar to those previously studied in animals may be anticipated.

SUMMARY

A case is reported in which a man accidentally ingested a lethal amount of a commercial insecticide containing DDT. At autopsy pronounced tubular degeneration of the kidneys and severe toxic hepatic degeneration were noted. Similar lesions were reproduced experimentally in a small series of rabbits.

4. Lillie, R. D., and Smith, M. I.: Pub. Health Rep. **59**: 979-984 (July 28) 1944.

5. Cameron, G. R., and Burgess, F.: Brit. M. J. **1**: 865-871 (June 23) 1945.

6. Nelson, A. A.; Draize, J. H.; Woodard, G.; Fitzhugh, G.; Smith, R., and Calvery, O.: Pub. Health Rep. **59**: 1009-1020 (Aug. 4) 1944.

7. Woodard, G.; Nelson, A. A., and Calvery, H. O.: J. Pharmacol. & Exper. Therap. **82**: 152-158 (Oct.) 1944.

8. Smith, M. I., and Stohlmán, E. F.: Pub. Health Rep. **59**: 984-993 (July 28) 1944.

9. (a) Case, R. A. M.: Brit. M. J. **2**: 842-845 (Dec. 15) 1945. (b) Smith, M. I.: Accidental Ingestion of DDT, with a Note on Its Metabolism in Man, J. A. M. A. **131**: 519-520 (June 8) 1946. (c) Wigglesworth, V. D.: Brit. M. J. **1**: 517 (April 14) 1945.

10. Stohlmán, E. F.: Pub. Health Rep. **60**: 350-353 (March 30) 1945. Stohlmán, E. F., and Smith, M. I.: J. Pharmacol. & Exper. Therap. **84**: 375-379 (Aug.) 1945. Smith, M. I., and Stohlmán, E. F.: Pub. Health Rep. **60**: 289-301 (March 16) 1945.

11. Stiff, H. A., Jr., and Castillo, J. C.: J. Biol. Chem. **159**: 545-548 (July) 1945.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following statements.

AUSTIN SMITH, M.D., Secretary.

PARATHION, GENERIC TERM FOR O,O-diethyl O-para-nitrophenyl thiophosphate

At its recent meeting the Council considered a request from S. A. Rohwer, chairman, Interdepartment Committee on Pest Control of the Agricultural Research Administration, United States Department of Agriculture, concerning the acceptability of the proposed name "parathion" (pronounced pa-rá-thi-on) for the new insecticide, O,O-diethyl O-para-nitrophenyl thiophosphate. On the basis of the brief submitted by Mr. Rohwer, the Council's Committee on Nomenclature recommended that the name be declared acceptable, and the Council voted that parathion be recognized as the common, or generic, name for O,O-diethyl O-para-nitrophenyl thiophosphate.

HEXACHLOROPHENE, GENERIC TERM FOR bis(2-hydroxy-3, 5, 6-trichlorophenyl) methane

The Council considered the proposal of a pharmaceutical manufacturer for the use of the term hexachlorophene as a generic designation for bis(2-hydroxy-3, 5, 6-trichlorophenyl) methane. No objection was raised to the term, and the Council voted to recognize hexachlorophene as the generic, or common, designation for bis-(2-hydroxy-3, 5, 6-trichlorophenyl) methane.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., Secretary.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1947, p. 57).

The following dosage form has been accepted:

BREWER & Co., INC., WORCESTER, MASS.

Solution Procaine Hydrochloride 2% with Epinephrine 1:25,000: 30 cc. vials. Each cubic centimeter contains procaine hydrochloride 20 mg., epinephrine 0.04 mg. and sodium chloride 3.7 mg. in water, with sodium bisulfite 0.1 per cent and chlorobutanol 0.5 per cent as preservatives.

ASCORBIC ACID (See New and Nonofficial Remedies, 1947, p. 517).

The following dosage form has been accepted:

WALKER VITAMIN PRODUCTS, INC., MOUNT VERNON, N. Y.

Vitamin C Drops: 15 cc. bottles with dropper. Each cubic centimeter contains 150 mg. of ascorbic acid, 0.25 cc. of water and 0.003 cc. orange oil, with equal parts of glycerin and propylene glycol.

FUNGUS EXTRACTS (See New and Nonofficial Remedies, 1947, p. 9).

The following additional extracts have been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Fungus Extracts: 2 cc., 5 cc. and 30 cc. vials.

Puccinia coronata avenae (Crown Rust of Oats); *Ustilago avenae* (Loose Smut of Oats); *Ustilago tritici* (Loose Smut of Wheat) and *Ustilago medians* (Loose Smut of Barley).

VINBARBITAL SODIUM (See New and Nonofficial Remedies, 1947, p. 420).

The following additional dosage form has been accepted:

SHARP & DOHME, INC., GLENOLDEN, PA.

Solution Delvinal Sodium: 5 cc. ampuls and 20 cc. vials. Each cubic centimeter contains vinbarbital sodium 60 mg. in aqueous 90 per cent propylene glycol solution.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 14, 1948

KALA-AZAR

Kala-azar, although highly endemic in the Mediterranean littoral, India and China, was not a serious military problem in World War II. Some 75 cases of the disease were recorded in the American army during the war; no doubt but few cases will be recognized in this country. The clinical course, diagnosis and treatment of kala-azar were summarized in a recent article by Major Harry Most and Capt. Paul H. Lavietes¹ on the basis of 30 patients treated for the disease at Moore General Hospital, Swannanoa, N. C., a tropical disease center. The incubation period in kala-azar has not been definitely established. The shortest incubation period in their series¹ was three weeks, and the longest, thirty-three months. The onset of the disease is characterized by abruptness, chills and high fever in the majority of patients. The fever is intermittent, with one or two rises to 101 to 106 F. daily. Double peaks in the daily temperature curve were observed in 50 per cent of the cases in this series. The second rise may occur late at night, and unless temperatures are taken every two or three hours during the twenty-four hours and charted graphically, this feature may be overlooked. Intercurrent infection may alter the intermittent character of the temperature and may result in periods of high sustained fever. Subjective symptoms were surprisingly few, despite the prolonged periods of chills and fever; there were an only moderate loss of strength, some loss of weight and headaches. The patients did not appear seriously ill or toxic. The tongue was not coated and did not show evidence of severe nutritional disease. A mild, general adenopathy was present in most of the patients, with cervical adenopathy in 7. The most striking physical signs were in the abdomen and were related to enlargement of the spleen, the liver or both. The spleen was enlarged in 27 patients of this series on the first examination and in 3 patients later in the disease. Seventy-three per cent showed enlargement of the liver; this was not seen without coincident enlargement of the spleen. The speed with

which the spleen enlarged was striking in many instances. In some the spleen was well down into the pelvis between the third and sixth month of the clinical course. Leukopenia develops early, the serum globulin level is elevated and the serum albumin is depressed. Anemia may be severe and frequently is accompanied by moderate thrombopenia. The anemia is mildly hypochromic or normochromic; the erythrocyte sedimentation rate is usually increased.

The diagnosis is established by the demonstration of *Leishmania donovani* in smears or cultures from material derived from spleen, bone marrow, liver, lymph node or peripheral blood. Cultures should not be discarded in less than a month, because growth in some cases may be slow. If one or more smears or cultures of the bone marrow are negative, splenic puncture should be performed. Splenic puncture was the most reliable diagnostic procedure and gave uniformly positive results. The authors warned, however, that splenic puncture should be performed only in cases in which kala-azar is suspected because of exposure in endemic areas and in which clinical data support the diagnostic impression. It should be done only when the edge of the spleen is well below the costal margin. The blood clotting time and the bleeding time should be determined beforehand. If the clotting time is significantly prolonged, whole blood should be transfused in amounts sufficient to bring it within normal limits. The site of puncture is selected midway between the edge of the spleen and the costal margin.

The differential diagnosis of kala-azar involves the exclusion of malaria, undulant fever, the various bacteremias or septicemias and primary diseases of the hematopoietic organs, such as Hodgkin's disease, aleukemic leukemia, aplastic anemia and infectious mononucleosis. Antimalarial drugs, sulfonamide compounds and penicillin are not of benefit in kala-azar except to control intercurrent infections.

Compounds of antimony are specific in the treatment of kala-azar. The drug of choice, in the experience of the authors, is ethylstibamine ("neostibosan" N.N.R.). A minimum of .5 Gm. of the drug (0.3 Gm. intravenously daily for seventeen days) should be given to patients as initial treatment or to patients who have relapsed from stibamine glucoside ("neostam" N.N.R.) or from smaller amounts of ethylstibamine. Subsequent treatment of failures or relapses should be repeated with larger amounts of ethylstibamine. Repeated failure after several adequate courses of pentavalent antimony may occur, and such cases should be treated with 4,4'-diamidinostilbene ("stilbamidine"). All patients were cured in the authors' series. Patients with kala-azar should be observed for at least six months after completion of treatment to discover relapses. These are usually associated with return of fever, enlargement of the spleen, leukopenia, anemia and elevated levels of serum globulin.

1. Most, H., and Lavietes, P. H.: Kala-Azar in American Military Personnel, *Medicine* 26:221 (Sept.) 1947.

RADIOACTIVE VIRUS

A promising new method of immunologic research has been introduced by Libby and Madison¹ of the Stamford Research Laboratories, American Cyanamid Company, in their study of the topographic distribution of a radioactive virus after intravenous injection into mice. Radioactive tobacco mosaic virus (TMV) was prepared by the method developed by Born² and Stanley.³ Seedling tobacco plants 2 to 3 inches high were inoculated with tobacco mosaic virus and then placed in individual brown glass bottles, each of which contained 120 cc. of nutrient solution. To each bottle there was then added 18 mg. of sodium biphosphate (Na_2HPO_4) containing approximately 278 microcuries of radioactive phosphorus (P^{32}). The level of radioactivity was maintained for thirty days at between 1 and 3 microcuries per cubic centimeter by weekly additions of the radioactive sodium biphosphate or by complete changes in the nutrient solution. After the inoculated plants had grown for thirty days in the radioactive nutrient solution the tobacco mosaic virus was extracted from the stems and leaves by the Stanley⁴ method and recrystallized three times. The viability of the final product was proved by infecting normal tobacco plants. Evidence that the radioactivity was associated with the virus molecule was afforded by the fact that the specific radioactivity was constant during repeated crystallizations.

One hundred and five mice that weighed 18 to 20 Gm. were each injected intravenously with 0.64 mg. of the radioactive virus in 0.1 cc. solution. Twenty-four hours later a group of five test mice and five controls were etherized and bled from the heart. The pooled serum from each group was titrated for anti-tobacco mosaic virus antibodies. Tests of the distribution of the tagged tobacco mosaic virus in the various tissues was made by radioautographs. To obtain these radioautographs a 3 to 4 mm. dehydrated and paraffin-impregnated sagittal section of each mouse was placed in contact with a roentgen ray film and exposed for a period of ten to fourteen days. The resulting photographs indicated a concentration of most of the radioactive tobacco mosaic virus in the liver. Only traces were found in the other tissues of the sagittal sections.

This hepatic localization was confirmed by radioactive titrations of weighed samples of all organs and tissues. Weighed samples were dried at 125 C. for twenty-four hours and then incinerated at 600 C. for twenty-four hours. The radioactivity of each sample was then measured by means of a Geiger counter. These measurements showed that by the end of twenty-four hours 63 per cent of the injected dose of radioactive tobacco mosaic virus was located in the liver

and about 3 per cent in the spleen. About 30 per cent was distributed to the remainder of the carcass. Approximately 3 per cent was found in the urine and feces.

From the second till the tenth day after injection there was a rapid decrease in the radioactive titer of the liver, with a slower fall in hepatic titer till the end of the experiment (thirty-four days). This rapid fall in liver virus concentration was accompanied by increased elimination of radioactive elements in the urine and feces and by a rapid rise in the specific antibody titer of the blood stream. The experiments thus suggest a major role of the liver in the removal, destruction and elimination of the virus and the probable dominant role of the liver in specific antibody production.

Recognition of the liver as the presumptive dominant immunologic organ in virus disease may well prove to be a major contribution to current immunologic concepts. Work has been initiated in which other viruses will be tagged, other types of tagged proteins will be tested, and observations will be made on other animal species. Detailed histologic studies will be made by the microscopic radioautographic methods recently developed by Endicott and Yagoda⁵ of the National Institute of Health and by Evans⁶ of Columbia University.

LOCAL HEALTH UNITS FOR THE NATION

The need for local public health units to provide the six traditional preventive medical services throughout the nation has long been recognized by the members of the medical profession. The optimum size of such units and the areas to be included have been unanswered questions. Now a blueprint for the nation has been developed by the American Public Health Association.¹ Twelve hundred units, each embracing from one to six counties and at least 50,000 persons, will do the job at an estimated cost of \$1 per capita per year. A unit composed of a health officer, a sanitary engineer, public health nurses and auxiliary personnel will bring measures for control of communicable disease, sanitary supervision and advice, child and maternity welfare efforts, public health laboratory services, vital statistics service and public health education to every community, rural and urban. This report of Dr. Haven Emerson's committee has received the approval of the state health officers and many teachers of public health,² and also of sixty-five representative voluntary agencies interested in health.³

5. Endicott, K. M., and Yagoda, H.: *Proc. Soc. Exper. Biol. & Med.* **64**: 170 (Feb.) 1947.

6. Evans, T. C.: *Proc. Soc. Exper. Biol. & Med.* **64**: 313 (March) 1947.

1. Local Health Units for the Nation, Committee on Administrative Practice, Subcommittee on Local Health Units, New York, American Public Health Association, 1945.

2. Proceedings of the Ann Arbor Conference of State Health Officials and Teachers and Students of Public Health, University of Michigan, New York, American Public Health Association, 1945.

3. Proceedings of the National Conference on Local Health Units, Princeton University, September 1947, New York, American Public Health Association, 1947.

1. Libby, R. L., and Madison, C. R.: *J. Immunol.* **55**: 15 (Jan.) 1947.

2. Born, H. J.; Lang, A.; Schramm, G., and Zimmer, K. G.: *Naturwissenschaften* **29**: 222, 1941.

3. Stanley, W. M.; J. Gen. Physiol. **25**: 881, 1942.

4. Stanley, W. M.: *J. Biol. Chem.* **115**: 673, 1936.

Members of the medical profession may provide leadership for this movement in various ways. On community health councils physicians may stimulate consideration of the need for a reorganized local public health administration; the establishment of local public health units based on the principles of preventive medicine and the geographic boundaries set forth in the Emerson Report;¹ the establishment of positions for local health officers which will offer a salary commensurate with the training required and the responsibility carried and which will be free of political pressure; the choice of local health officers to obtain men well trained in preventive medicine and free of political domination; expansion of schools of public health and other institutions to provide physicians, nurses, engineers, health educators, statisticians, public health laboratory directors and auxiliary technicians in sufficient numbers to meet the rapidly increasing need.

Possibly some local health officers now providing good service on a part time basis will be slow to see the need for the revolutionary shift to the full time basis. Local boards of supervisors, town councils and boards of aldermen may hesitate to pool their resources with contiguous units and thus give up some of their local autonomy. Local communities may wonder if it is really necessary to look beyond their present staff of public health workers and bring in specialists trained in public health administrative procedure. The fact that prompt realization of the complete plan may require some years is no reason for failing to begin. The medical profession must assume active leadership locally in this reformation of the local public health administration of the country.

Current Comment

PLAGUE IN THE UNITED STATES

Human plague appeared for the first time in the United States¹ in the Chinese quarter of San Francisco March 6, 1900. Between that date and Jan. 1, 1940 eight states reported cases of human plague—Washington, Oregon, California, Utah, Nevada, Texas, Louisiana and Florida. During 1946 infection had been found in ground squirrels and other rodents as far east as the Mississippi Valley. The United States Public Health Service has conducted campaigns for the eradication of infected rodents since 1908. The budget for such eradication dropped from \$200,000 in 1912 to \$51,000 by 1915. This campaign, coupled with efforts by the individual states, still continues but has languished considerably. Creel² estimated in 1941 that a well organized and well sustained campaign financed by approximately \$2,500,000 would virtually eliminate rodent plague in the United States. To date the needed

funds have not been forthcoming. This condition is a definite threat of human plague in epidemic proportions in the United States. The main conditions necessary for epidemics of human plague are infected rodents, the flea transmitter and susceptible persons in close proximity. Overcrowded housing conditions in many large cities tend toward the establishment of the conditions necessary to epidemic outbreak. Proper preventive action is needed immediately.

HISTOPLASMOSIS AND THE TUBERCULIN TEST

Much study is needed to explain the contrast in occurrence between the rare clinical cases of histoplasmosis and the numerous pulmonary infiltrates associated with histoplasmin sensitivity. Many of these lesions are easily mistaken for tuberculosis. Surveys in ninety-two major cities of the United States revealed many pulmonary lesions in persons who were non-reactors to tuberculin. In Kansas City, Mo., many of the infiltrates were in reactors to histoplasmin but not to tuberculin; a diagnosis of tuberculosis must be made on more evidence than is obtained from a roentgenogram alone.¹ Although the view was advanced that this phenomenon represented simply the reversion to negative of a once positive tuberculin test, the demonstration of a strikingly uneven geographic distribution of these cases suggested that some disease other than tuberculosis was responsible. The notion that a single agent may be responsible for the host reactions is supported in the East Central states, where tuberculin-negative persons were positive to histoplasmin, and by the recent detection of 3 nonfatal cases of histoplasmosis in Kansas City alone. This, however, is not as important as the widespread existence of pulmonary lesions caused by some agent other than the tubercle bacillus. A report from the United States Public Health Service² states that among 72 asymptomatic cases in school children in Kansas City only a few were limited to the lymph nodes, a few were of the disseminated type and approximately two thirds were nodular, sharply circumscribed foci. The remaining one-fourth were diffuse, patchy infiltrations with poorly defined borders. In some of the lesions a central core of calcification was noted originally or in later roentgenograms. The lesions tend to calcify slowly, and many infiltrations persist without complete calcification during two years of observation. Where histoplasmin sensitivity is widespread, pulmonary infiltrations as well as calcifications are frequently nontuberculous and can be differentiated from tuberculosis at present only by skin tests. The importance of performing an accurate and reliable tuberculin test when pulmonary diagnostic problems are concerned cannot be overemphasized.

1. Hampton, B. C.: Plague in the United States, Pub. Health Rep. 55:1143-1158 (June 28) 1940.
2. Creel, R. H.: Plague Situation in the Western United States, Am. J. Pub. Health 31:1155-1162 (Nov.) 1941.

1. Weber, Francis J.: Editorial—A Problem in Mass Surveys, Pub. Health Rep. 62:1709-1710, 1947.
2. Furcolow, M. L.; Mantz, H. L., and Lewis, I.: The Roentgenographic Appearance of Persistent Pulmonary Infiltrates Associated with Sensitivity to Histoplasmin, Pub. Health Rep. 62:1711-1718, 1947.

ORGANIZATION SECTION

Official Notes

MEETING OF THE BOARD OF TRUSTEES

CLEVELAND, JAN. 4-7, 1948

A meeting of the Board was held Sunday, January 4, and other meetings were held during the interim session of the Association in Cleveland. All members of the Board were present.

Cooperation with Veterans Administration

The Board instructed that the Committee on Veterans' Medical Problems be requested to offer their services to the director of the Veterans Administration in the solution of problems facing the administration.

Consultants on American Health Resorts

Authorization was given to the Council on Physical Medicine to establish a group of consultants on American Health Resorts to continue with at least part of the work of the Committee on American Health Resorts, which has recently been discontinued.

Expansion of Bulletin of Woman's Auxiliary into a Magazine

The Editor was authorized to continue negotiations with a view to expanding the *Bulletin* of the Woman's Auxiliary into a monthly magazine, the subscription price of which probably will be \$1 a year.

Public Relations

The Board approved the employment of Theodore R. Sills and Company as public relations counsel and of Mr. Lawrence W. Rember as executive assistant to Dr. Lull in charge of public relations.

Increase in Expenses

A report was prepared for the House of Delegates as to the reasons for the increase in expenses and the deficit which occurred in 1947, and which promised to be even greater in 1948 unless the income of the Association was increased.

Medical Motion Pictures

It was decided by the Board that the Association cannot consider the making of motion pictures but that it can, and should, continue the policy of operating a judging and lending bureau of films.

Council on National Emergency Medical Service

Authorization was given to the Council on National Emergency Medical Service to nominate to the Board persons to serve as consultants on special problems.

On nomination from the Council, Dr. James E. Paullin was elected to serve as a consultant to the Council on matters pertaining to civilian care in time of national emergency.

The members of the Council were appointed delegates to confer with the various persons in authority and the agencies of the United States Department of the Defense, as well as with such other agencies, organizations and persons as may be involved in the work of national defense and national emergency medical service.

General Practitioner's Medal

The Board voted that no present or past officer of the Association or present member of the House of Delegates shall be eligible for the General Practitioner's Medal.

Hospital Competition with Private Practice

The report of the special committee to study the matter of hospital competition with private practice was adopted, and it was decided to incorporate it in the statement recently prepared in the headquarters office concerning the Association's Ten Point National Health Program and to distribute copies to the members of the House of Delegates on Tuesday, January 6.

Meetings of Councils of Board of Trustees

The councils of the Board of Trustees are requested not to hold meetings at the annual or interim sessions of the Association.

Appointments

Dr. Virgil P. Sydenstricker was elected to succeed Dr. John H. Musser (deceased) on the Council on Medical Education and Hospitals, and has accepted the appointment.

Dr. L. H. Bauer was appointed to represent the American Medical Association at a meeting called by the National Health Council on January 23 for the promotion of full time health units for the nation. Dr. Dean F. Smiley was appointed to serve as reporter at the meeting.

The Board's Committee to Study Nursing Problems was requested to cooperate with the conference group made up of representatives of the American Hospital Association, the American Nurses Association and the American Medical Association.

First International Poliomyelitis Conference

Official endorsement was given to the first international poliomyelitis conference of the National Foundation for Infantile Paralysis. Dr. R. L. Sensenich and Dr. E. L. Henderson were appointed to attend the conference to be held in New York July 12-17, 1948.

National Conference on Family Life

The Board added Mrs. Luther Kice to its previously appointed representatives to the National Conference on Family Life, which will be held in Washington, D. C., in May 1948.

Accident Prevention

A committee composed of Drs. Morris Fishbein, George F. Lull, Frank G. Dickinson, W. W. Bauer, R. J. Plunkett and Fritjof Arestad was appointed to confer from time to time with a similar committee of the National Safety Council on problems in accident prevention.

National Committee on Home Safety

Dr. W. W. Bauer was appointed as the liaison member of the American Medical Association to the National Committee on Home Safety, of which the Association has accepted a participating membership.

Joint Committee on Evaluation of Tuberculosis Control

The American Medical Association will cooperate with the National Tuberculosis Association, the American Public Health Association and the United States Public Health Service in planning and developing schedules for the evaluation of tuberculosis control procedures, in reviewing appraisal forms for tuberculosis work which are now available and in recommending a long range plan for appraisal of both voluntary and official agencies active in the field of tuberculosis control. A joint committee of the four organizations will be appointed for these purposes.

Cooperation with Bureau of Medicine and Surgery of the Navy Department

Authorization was given to Dr. Donald G. Anderson, secretary of the Council on Medical Education and Hospitals, to accept membership on the Board of Consultants of the Bureau of Medicine and Surgery of the Navy Department.

World Medical Association

A resolution was adopted by six members of the Board of Trustees commending the work and accomplishments of their colleagues who represented the American Medical Association as delegates and alternates at the meeting of the World Medical Association held in Paris, France, in September and assuring them of their determination to support their efforts for solidarity of world physicians and for world peace.

An appropriation was made by the Board toward the support of the World Medical Association.

Portrait of Dr. Olin West

The Board authorize the procurement of a portrait, instead of a bas-relief, of Dr. Olin West and made an appropriation to cover the expense.

Award in Recognition of Outstanding Accomplishment in the Field of Human Nutrition

An invitation from the Nutrition Foundation, Inc., to cooperate in the presentation of a yearly award in recognition of outstanding accomplishment in the field of human nutrition was accepted.

Editorial on Fee Splitting

Authorization was given by the Board for the publication in THE JOURNAL of an editorial entitled "Rebates, Kickbacks, Commissions and Medical Ethics."

Many other subjects were considered, and some of them will be again deliberated on at future meetings.

INVITATION TO SECTION ON OPHTHALMOLOGY

The Ophthalmological Society of Australia, which is a branch of the British Medical Association, has invited the Section on Ophthalmology of the Scientific Assembly of the American Medical Association to be represented at their annual meeting at Perth, Western Australia, Aug. 15 to 21, 1948. Any member of the Section on Ophthalmology who would consider going to Australia should communicate with Dr. Trygve Gundersen, Secretary of the Section, 101 Bay State Road, Boston 15.

Coming Medical Meetings

American Association of Industrial Physicians and Surgeons, Boston, March 28-April 4. Dr. Frederick W. Slobe, 28 E. Jackson Blvd., Chicago 4, Secretary.

American College of Allergists, New York, Hotel Pennsylvania, March 12-14. Dr. Fred W. Wittich, 423 LaSalle Medical Bldg., Minneapolis 2, Secretary.

American Laryngological, Rhinological and Otological Society, Atlantic City, April 7-9. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, Philadelphia, Feb. 26. Dr. Norman N. Smith, 291 Whitney Ave., New Haven 11, Conn., Secretary.

American Society of Biological Chemists, Atlantic City, March 14-19. Dr. Otto A. Bessey, Public Health Research Institute, New York 19, Secretary.

Central Surgical Association, Chicago, Drake Hotel, Feb. 19-21. Dr. Walter G. Maddock, 250 E. Superior St., Chicago 11, Secretary.

Chicago Medical Society Annual Clinical Conference, Chicago, Palmer House, March 2-5. Dr. Willard O. Thompson, 30 N. Michigan Blvd., Chicago 2, Secretary.

Dallas Southern Clinical Society, Dallas, Texas, Hotel Adolphus, March 15-18. Dr. Glenn D. Carlson, 1133 Medical Arts Bldg., Dallas, Secretary.

Michigan Postgraduate Clinical Conference, Detroit, Book-Cadillac Hotel, March 10-12. Dr. H. H. Cummings, 2014 Olds Tower, Lansing 8, Chairman.

Missouri State Medical Association, St. Louis, Hotel Jefferson, March 14-17. Mr. T. R. O'Brien, 634 N. Grand Blvd., St. Louis 3, Exec. Secretary.

New Orleans Graduate Medical Assembly, New Orleans, Municipal Auditorium, Feb. 23-26. Dr. Max M. Green, 1430 Tulane Ave., Room 105, New Orleans 13, Secretary.

Pacific Coast Surgical Association, Los Angeles, Ambassador Hotel, Feb. 24-28. Dr. Carleton Mathewson Jr., Stanford Univ. Hospital, San Francisco, Secretary.

Southeastern Surgical Congress, Hollywood, Fla., Hollywood Beach Hotel, April 5-8. Dr. Benjamin T. Beasley, 45 Edgewood Avenue S. E., Atlanta 3, Ga., Secretary.

Southwest Allergy Forum, Oklahoma City, April 5-6. Dr. Fannie Lou Leney, 1200 N. Walker St., Oklahoma City, Secretary.

United States-Mexico Border Public Health Association, Laredo, Texas and Nueva Laredo, Mexico, March 20-22. Dr. M. F. Haralson, U. S. Court House, El Paso, Texas, Secretary.

Washington Letter

(From a Special Correspondent)

Feb. 12, 1948.

Capital's Hospital Center Might Take Entire Naval Observatory Tract

Public Building Administrator W. E. Reynolds disclosed tentative plans whereby the projected hospital center in the District of Columbia would use the entire tract of the Naval Observatory, but construction of the main structure would be delayed until the observatory moves. It is now proposed to erect the hospital almost on the exact site of the observatory administration building. This would place it in about the center of the circular observatory site, which is on high ground overlooking the city. This proposal would delay start of the building until at least 1950. Previously it was planned to use only the western portion of the site. The new proposal hinges on the Navy's getting money from Congress for a new observatory site, which may be located in Virginia. A bill to provide such funds is now in the Budget Bureau. Mr. Reynolds said officials of the three hospitals which will form the new center, Garfield, Emergency and Episcopal, have agreed that it is worth while to wait for the better site. He explained that while the Naval Observatory site has been discussed it has never been finally accepted and another site is still a possibility. The House Appropriations Committee has endorsed a \$500,000 appropriation for the project for the 1949 fiscal year and has increased the cost limit of the new medical faculty from \$18,000,000 to \$19,500,000.

Assistant Federal Security Administrator

Donald Kingsley, formerly a member of the executive office staff and executive secretary of the President's Scientific Research Board, has been appointed to the post of assistant federal security administrator, succeeding Maurice Collins. Mr. Kingsley is the economic advisor of the International Labor Office in Geneva, Switzerland, and was chief of that office's mission to Greece. He was born in Cambridge, N. Y., educated in Syracuse University and the University of London, and before entering government service he taught at Syracuse University and Antioch College.

Ten Year Study of National Health

A letter from President Harry Truman to the Federal Security Agency asking that federal body to study health problems in the United States and to prepare a ten year improvement plan was made public by the White House. In the letter Mr. Truman informed Oscar R. Ewing, head of the agency, that he desired a program to complement and increase the effectiveness of health legislation that he is seeking from Congress. The Senate subcommittee on labor is considering bills providing for national health insurance.

Plans Approved for Cancer, Heart and Mental Disease Research Center

The National Capital Park and Planning Commission has given tentative approval to plans for the proposed research hospital for cancer, heart and mental diseases of the National Institute of Health, to be erected at Bethesda, Md., on Rockville Pike, opposite the Navy Medical Center. The U. S. Public Health Service and Public Buildings Administration thus will get authority to proceed with construction of what is described as the world's largest research hospital of this type. It will be thirteen stories high and will be located on a 100 acre site adjoining the present Public Health Institute. The project will cost \$30,000,000, requested by President Truman in the 1948-1949 budget, and will provide one hundred and fifty beds for patients with cancer, one hundred and fifty for those with heart disease and one hundred and fifty for mental patients. All will be subjects for research by the Public Health Service. The building will have in addition fifty bed accommodations, laboratories and other research facilities for the staff. The site was donated by the late Luke Wilson.

Pediatrician Concerned With Psychologic Factors

Dr. George S. Stevenson, medical director, National Committee for Mental Hygiene, told the National Commission on Children and Youth meeting here that the pediatrician is becoming increasingly concerned with the psychologic as well as the physiologic elements of disease. He said that in the past psychiatric education had almost completely ignored the child but that the trends toward comprehensiveness in pediatrics now include the educational field. The conference also discussed the proposed 1950 White House conference on children.

Medical Legislation

MEDICAL BILLS IN CONGRESS

U. S. Public Health Service and Osteopathy

A bill to amend the Public Health Service Act in regard to certain matters of personnel and administration, S. 1454, has passed the Senate. Before passage, the bill was amended by the adoption of an amendment submitted by Senator Smith, New Jersey, providing that graduates of colleges of osteopathy whose graduates are eligible for licensure to practice medicine or osteopathy in a majority of the states of the union, or approved by a body or bodies acceptable to the administrator of the Federal Security Agency, shall be eligible, subject to the other provisions of the Public Health Service Act, for appointment as commissioned medical officers in the Public Health Service.

G. I. Bill of Rights

Congressional action has been completed on S. 1394, increasing the subsistence benefits available to veterans pursuing full time educational courses under the G. I. Bill of Rights. This legislation will increase the benefits from \$65 per month to \$75 for single veterans, from \$90 to \$105 if the veteran has one dependent and to \$120 if the veteran has two or more dependents.

Another bill has passed the House and Senate, S. 1393, the effect of which will be to raise the ceiling of the allowance plus compensation for veterans receiving on the job training to \$250 for single men, \$325 for men with one dependent and \$350 for those with more than one dependent. The bill will be considered by a conference committee before being sent to the President.

Criminal Sexual Psychopaths

A bill introduced by Representative Miller, Nebraska, H. R. 5264, after providing penalties for designated indecent acts, proposes a new law for the District of Columbia for the commitment, detention and treatment of the criminal sexual psychopaths, defined as persons, not insane or feeble-minded, who suffer from a mental disorder coupled with criminal propensities to the commission of sex offenses.

The Physically Handicapped

Congressman Miller, Connecticut, proposes by H. J. Res. 302 to authorize annually an appropriation of \$250,000 to be expended by the Secretary of Labor to effectuate the purposes of National Employ the Physically Handicapped Week and to provide the President's Committee on National Employ the Physically Handicapped Week with adequate personnel within the Department of Labor.

STATE LEGISLATION

Kentucky

Bills Introduced.—H. 187 proposes the enactment of a hospital survey and construction act and designates the state board of health as the proper agency to apply for and receive federal funds to assist in the state construction program. The proposal also provides for the appointment of a hospital advisory council to assist and advise the state board of health in developing and administering a state plan for the construction of hospitals and in prescribing minimum standards for the maintenance and operation of any hospitals which receive or are to receive federal aid for construction pursuant to the state plan. H. 145 proposes to direct the board of trustees of the University of Kentucky to establish in connection with the university and as an integral part thereof a College of Medicine and Surgery. S. 88 proposes the creation of a Kentucky Hospital Board to advise the state board of health in matters relating to the licensing of hospitals and also proposes to establish a state hospital board to formulate minimum standards regarding the physical plant and equipment and rules and regulations necessary to administer the act. Under the proposal a hospital would mean any institution which maintains and operates organized facilities for the diagnosis, treatment and care of human beings suffering from illness, injury or deformity, where bedside nursing care is rendered for a period exceeding twenty-four hours and where the institution can care for 10 or more patients. S. 105 proposes the creation of a medical research commission to provide for a program of research in the fields of medicine, surgery and allied sciences, preventive medicine, control of diseases and all other features of medicine and surgery that affect the health and welfare of the people of the state.

Massachusetts

Bills Introduced.—H. 326 proposes the establishment at or near Boston of a major branch of the University of Massachusetts to offer courses in, among other things, medicine. H. 1602 proposes the creation of a special commission for the purpose of investigating discrimination on grounds of race, color, religion or national origin in nonsectarian educational institutions in the commonwealth.

Mississippi

Bills Introduced.—H. 98 proposes to authorize the county superintendents of education of various counties to join with the state board of health and various county health departments in providing for health education programs in the public schools. H. 228 proposes to make it unlawful for any person to drive and operate a school bus unless the operator shall have been examined by a competent physician and shall have received a certificate certifying that such person is physically and mentally competent and fit to operate such bus.

New York

Bills Introduced.—A. 157 proposes the creation of a New York state victory medical college. A. 678 proposes the creation of a board of medical technologist examiners for the purpose of examining and licensing medical technologists and clinical laboratory technicians. A. 695 and S. Res. 38 propose machinery for making a survey and study of the causes and effects of heart disease, rheumatic fever, rheumatic heart and related diseases. A. 713 proposes the creation of a state board of chiropractic examiners and defines the practice of chiropractic as the science of locating and the removing of nerve interference in the human body, according to chiropractic principles, where subluxations of the vertebral column appear or where interference or misalignment is indicated. It excludes operative surgery, the reduction of fractures, the prescription of drugs or medicines and the practice of obstetrics. A. 714 proposes that the state constitution be amended so as to deny exemption from tax liability to hospitals which discriminate against persons because of race, creed, color or national origin. A. 800 proposes the creation of a state university in the city of New York to include, among other things, a school of medicine. A. 1181 proposes the creation of a temporary state commission to make a comprehensive survey and study of the state hospitals and institutions under the jurisdiction of the departments of health and mental hygiene. S. 458, to amend the public health law, proposes the creation of a board of massage examiners and defines massage as the stroking, kneading, tapping or rolling with the hands, or with other instrumentalities, of the human body for hygienic or remedial purposes, for the purposes of relieving, alleviating or reducing affected parts thereof, but shall not include reduction of a fracture or dislocation of a bone. S. 693, to amend the education law, proposes to require each medical inspector having jurisdiction over any public school in the state to examine each pupil attending such school for symptoms of tuberculosis at least once in each school year. S. 745, to amend the domestic relations law, proposes that a child born to a married woman by means of artificial insemination with the express or implied consent of her husband shall be deemed the legitimate, natural child of both the husband and his wife for all purposes and such husband and wife and such child shall sustain toward each other the legal relation of parent and child and shall have all the rights and be subject to all the duties of that relationship including the rights of inheritance from each other.

Virginia

Bills Introduced.—H. 86 proposes regulations for the operation of the hospital construction fund which is utilized in accepting and dispensing funds to be used for the state hospital construction program. S. 77 proposes to authorize and empower the governing boards of the medical college of Virginia and of the University of Virginia to establish fifteen annual nursing scholarships each of the annual value of \$100.

GOVERNMENT SERVICES

ARMY

PROMOTE THIRTEEN GENERALS IN MEDICAL DEPARTMENT

Following recent confirmation by the Senate of promotions of thirteen general officers of the Army Medical Department, seven of those affected received either new stars or confirmation of permanent promotion at a ceremony in the Surgeon General's Office, January 27, when temporary Major General Raymond W. Bliss, Surgeon General, and temporary Major General Malcolm C. Grow, the Air Surgeon, observed their acceptance of permanent grade. Also present were five officers who received one new star: Brig. Gen. George C. Beach Jr., commanding general, Army Medical Center, Washington, D. C.; Brig. Gen. Albert W. Kenner, of the Army Personnel Board, and Brig. Gen. Thomas L. Smith, chief of the Army Dental Corps. Each received the additional star of a major general. Col. Walter D. Love, assistant chief of the Army Dental Corps, and Col. James A. McCallum, chief of the Army Veterinary Corps, received the star of a brigadier general. Others whose promotions received confirmation by the Senate were John M. Willis, commanding general, Brooke Army Medical Center, as permanent major general and, as a permanent brigadier general, Omar H. Quade, commanding general, Fitzsimons General Hospital, Denver; Edward A. Noyes, chief surgeon of the European Command; James A. Bethea, chief surgeon of the Far East Command; Guy B. Denit, surgeon of the First Army, and Joseph I. Martin, commandant of the Medical Field Service School and assistant commanding general of Brooke Army Medical Center, Fort Sam Houston, Texas.

MEETING OF HISTORIANS OF WORLD WAR II

Historians of the British Commonwealth and the United States met at the Pentagon, Washington, D. C., February 3-6 with members of the Historical Division of the Army, to report progress on the completion of the story of World War II. Great Britain was represented by Brig. Francis Latham, chief of the historical section of the Cabinet Office; Dr. J. R. M. Butler, chief civilian historian of the Cabinet Office and professor of modern history at Cambridge University, and Dr. J. C. Nerney, chief historian of the Royal Air Force. The Canadian historians in attendance were Col. C. P. Stacey, chief of the historical section of the Canadian Army; Lieut. Col. G. W. L. Nicholson, and Dr. Fred H. Hitchins, historian of the Royal Canadian Air Force. New Zealand was represented by Major Gen. Howard K. Kippenberger and Col. Monty C. Fairbrother. Australia was represented by John Balfour, who did much writing on the official Australian history of World War I. South Africa was represented by Lieut. Col. J. A. I. Agar-Hamilton, editor in chief of the Union War History.

In attendance also was the U. S. Historical Division's Civilian Advisory Committee headed by Dr. James P. Baxter, president of Williams College. The Department of the Army Historians were headed by Dr. Kent R. Greenfield, former chairman of the History Department at Johns Hopkins University.

At the conference reports of progress were given on the program of each nation in compiling the history of the military operations of World War II. The U. S. Army history of World War II will total about one hundred volumes, and at least eleven of these volumes are expected to be released during 1948, among which will be the volume on "Medical Department: Organization in Planning" and "The Training of Medical Personnel."

ARMY AWARDS AND COMMENDATIONS

Lieutenant Colonel George D. Wilson

The Legion of Merit has been awarded to Lieut. Col. George D. Wilson, M. C., A. U. S., now of Asheville, N. C. The citation read as follows: For outstanding services as chief, Reconditioning Service, Oliver General Hospital, Augusta, Ga., from July 25, 1944 to Dec. 18, 1945. He devised and put into use several pieces of apparatus which were used in remedial exercises, thus materially shortening the number of hospital days, and greatly improved the condition of the patients on discharge from this hospital. He also inaugurated a method for the determination of the extent of nerve injuries which has been adopted by the medical profession. His devotion to duty, initiative and outstanding qualities of leadership contributed materially to the successful accomplishment of the mission of the Medical Department. Dr. Wilson graduated from Temple University School of Medicine, Philadelphia, in 1937 and entered military service in March 1941.

Major William L. Sharp

The Bronze Star Medal has been awarded to Major William L. Sharp, M. C., A. U. S., now of Anderson, Ind. The citation read in part as follows: For meritorious service in connection with military operations against the enemy from Nov. 9, 1944 to May 8, 1945, in Belgium and Germany. In his capacity of division neuropsychiatrist, Major Sharp discharged his duties in an exemplary manner. He was responsible for the care, treatment and disposition in the division clearing station of all battle casualties having combat exhaustion and neuropsychiatric disabilities, salvaging 44.2 per cent of all such casualties, thus avoiding a great wastage of combat strength. He also assisted his colleagues in caring for the sick and wounded. Major Sharp's professional skill, sterling character and unremitting devotion to duty reflect creditably on himself and the Medical Corps. Dr. Sharp graduated from Indiana University School of Medicine, Bloomington-Indianapolis, in 1930 and entered military service in May 1942.

Major Theodore V. Oltman

The Bronze Star Medal has been awarded to Major Theodore V. Oltman, M. C., A. U. S., now of Newton, Kan. The citation read as follows: For meritorious service performed during the period June 4, 1944 to Aug. 25, 1944. Major Oltman, then commanding a hospital unit, voluntarily served as surgeon of a surgical team in Yunnan Province, China, within enemy artillery range. He continued his duties as surgeon, operating on critical cases, without regard to the precarious military situation and to his own personal safety. Dr. Oltman graduated from Rush Medical College in 1929 and entered military service in April 1943.

Captain Wilford L. Cooper

The Army Commendation Ribbon has been awarded to Capt. Wilford L. Cooper, M. C., A. U. S., now of Lexington, Ky. The citation read in part as follows: For performance of meritorious service while chief, Septic Surgery Section, Surgical Service, and proctologist, Army Service Forces Regional Hospital, Fort Benning, Ga., from September 1944 to February 1946. Captain Cooper has discharged his duty as section chief in a wholehearted manner, with efficiency and exactness, and in addition has conducted an interward and outpatient clinic in proctology which has served the entire hospital and post. Dr. Cooper graduated from University of Texas Medical Branch, Galveston, in 1939 and entered military service in August 1944.

NAVY

NAVY AND MARINE OFFICERS BEFORE RETIREMENT BOARDS

During 1946, boards of medical survey recommended that 2,527 officers of the Navy and Marine Corps appear before retirement boards. Of those recommended 95 per cent incurred in line of duty the condition for which they were surveyed; in 2.6 per cent the condition had existed prior to entry into service but was aggravated by service; in 1.7 per cent the condition existed prior to entry but was not aggravated by service. Among the remaining 0.7 per cent the source of the condition was unknown. Diseases of the circulatory system ranked first, accounting for 23.9 per cent of the total, and diseases of the motor system were second, accounting for 11.5 per cent. The results of combat injuries were included in "miscellaneous disease," which ranked third.

With regard to age the highest percentage, 14.8 per cent, was in the age group 25 to 29 years and the next highest percentage in the age group 50 to 54 years. Other data were obtained on the disease conditions found in these officers. The highest percentage for tuberculosis was in the age group from 25 to 29 and 30 to 34 years of age, which two groups comprised 46.1 per cent of the surveys for tuberculosis. The highest percentage for diabetes mellitus occurred in the age groups from 45 to 49 and 50 to 54 years.

Arthritis was the leading cause among the medical reasons for survey of these 2,527 officers; acquired deformity was second, hypertension third and tuberculosis fourth. It is of interest that more than 45 per cent of those surveyed, which includes both Naval and Marine Corps officers, had less than six years of active duty.

MEDICAL ASPECTS OF RADIOACTIVITY

The Bureau of Medicine and Surgery of the Navy, in conjunction with the American College of Physicians, will present a course in the medical aspects of radioactivity at the Naval Medical School, Bethesda, Md., February 18-27. The course has been arranged in cooperation with the scientists and specialists from civilian occupations, the armed services and the U. S. Public Health Service. The Joint Radiological Safety Training Committee has recommended that all members of the medical departments of the armed forces be given some training in radiologic safety. It is believed that this training should be extended to include civilian medical personnel.

Medical officers, both regular and reserve of the Army and Navy, will be admitted free of charge. Officers of the medical department of the Navy on active duty may be given "authorization orders" (no expense to the United States) to attend this course. Those interested should forward a request to the Bureau of Medicine and Surgery via their commanding officer. No classes are held on Saturday. The sessions will extend from 9 a. m. to 4 p. m. daily. The speakers scheduled are outstanding men in their respective fields.

PERSONAL

Capt. Roger D. Mackey (MC), former medical officer in command, U. S. Naval Hospital, Charleston, S. C., has been ordered to the Naval Hospital, San Diego, Calif., to assume command of that station. He is relieving Capt. Frederick R. Hook (MC), who has been ordered to a protracted period of hospitalization. Captain Mackey served on the staff of the medical service of the San Diego Hospital from 1935 to 1938.

PUBLIC HEALTH SERVICE

POSITIONS OPEN FOR PSYCHIATRISTS

The U. S. Public Health Service has received information that the following state positions in community mental health work are available for psychiatrists:

- Alabama. Director of state mental hygiene program, State Department of Health, \$5,100 to \$7,100.
- Colorado. Psychiatrist, State Division of Public Health.
- Georgia. Director, Division of Mental Hygiene, Department of Public Health, \$6,600.
- Idaho. Psychiatrist, Department of Public Health, \$3,060 (half time).
- Kentucky. Director, Division of Mental Health, State Department of Health.
- Michigan. Director, Child Guidance Clinic, \$7,560 to \$8,760; fellow in child guidance, \$4,020 to \$4,740.
- Nebraska. Two psychiatrists for child guidance clinic, \$7,440 and \$6,600; clinical psychiatrist, \$4,020; two clinical psychiatrists with teaching responsibilities, \$7,500 and \$8,000.
- North Carolina. Three psychiatrists for state mental hygiene programs, \$7,500, \$6,000 and \$5,000.
- Tennessee. Director of state mental hygiene program. Department of Public Health, \$5,640 to \$8,400.
- Utah. Psychiatrist, State Department of Public Welfare, \$8,000.

For additional information write to the Mental Hygiene Division, U. S. Public Health Service, Federal Security Building, South, Washington 25, D. C.

NATIONAL ADVISORY CANCER COUNCIL

The appointment of Dr. Edward A. Doisy of St. Louis and Dr. John J. Morton Jr. of Rochester, N. Y., as members of the National Advisory Cancer Council was announced by the Public Health Service January 28. Dr. Doisy, who is a Nobel Prize winner, previously served on the council from 1940 to 1943. Dr. Morton is a former president of the American Cancer Society and is also a member of the Committee on Growth of the National Research Council. Other members of the National Advisory Cancer Council at present are: Drs. Charles Huggins, Chicago; Robert S. Stone, San Francisco; Shields Warren, Boston; Waltman Walters, Rochester, Minn.; A. C. Ivy, Chicago, and Thomas Parran, Surgeon General of the U. S. Public Health Service.

EIGHTEENTH ANNUAL VENEREAL DISEASE SEMINAR

The eighteenth annual Venereal Disease Seminar will be held in Washington, D. C., January 18. Dr. George E. Parkhurst, medical officer in charge of U. S. Public Health Service Medical Center, Hot Springs, Ark., will discuss follow-up of contacts in venereal disease case finding. Professor Erik Barnouw, director of Columbia University School of Radio, will play recordings of interviews with venereal disease contacts and will discuss radio as a case-finding tool.

Dr. Robert E. Hingson, professor of anesthesiology at the University of Tennessee, Memphis, will demonstrate a method of injecting penicillin without puncturing the skin.

SCHOOL OF NURSING IN MEXICO

Miss Lucile Petry, chief, division of nursing, U. S. Public Health Service, will spend the month of February in Mexico, D. F., studying the feasibility of establishing a school of nursing at the University of Mexico. At the request of the university's president, Miss Petry's study is under the joint auspices of the Public Health Service of the Federal Security Agency and the W. K. Kellogg Foundation. Mrs. Agnes Chagas, nursing director of the Pan American Sanitary Bureau, will be visiting Mexico during the same period.

ASSISTANCE TO BOY SCOUTS

Elbert K. Fretwell, chief executive of the Boy Scouts, recently extended formal thanks to Surgeon General Thomas Parran for assigning personnel of the U. S. Public Health Service to the staff of the Boy Scouts of America last summer when 1,150 scouts and leaders participated in a World Jamboree at Moisson, France. Gerald Ferguson served as sanitary engineer and Dr. Walter Nelson as medical director. Concerning their work, Mr. Fretwell wrote: "The effectiveness of those two men is best shown in the statement that there were no major accidents and no sickness which would not normally be expected in a group the size of ours."

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARIZONA

Memorial Lectures at Phoenix.—The Lois Grunow Memorial Clinic Lecture series will be held February 19 beginning at 1 p. m. and extending through February 20, at the Lois Grunow Memorial Clinic, Phoenix.

THURSDAY

William H. Bickel, Rochester, Minn., Differential Diagnosis of Foot Pain.
Elvira Goettsch, Los Angeles, Treatment of Diarrhea in Infants.
Vincent J. O'Connor, Chicago, Differential Diagnosis and Treatment of Tumors of the Kidney and Ureter in Adults.
Henry G. Williams, Phoenix, Carcinoma of the Colon and Rectum.
Francis D. Murphy, Milwaukee, Renal and Nonrenal Uremias.
Lester W. Paul, Madison, Wis., Roentgenologic Aspects of Gastrointestinal Disease.

FRIDAY

Goettsch, Certain Conditions Which Interfere with Growth.
Oscar W. Thoentz, Phoenix, Ophthalmic Plastic Procedures.
O'Connor, Conservative Surgical Treatment of Hydronephrosis.
Bickel, Backache.
John A. Eisenbeiss, Los Angeles, Intracerebral Calcification.
Murphy, Hypertensive Heart Disease and Its Management.
Frank H. Lahey, Boston, Management of Diseases of the Thyroid.
Paul, Diagnostic X-Rays.

SATURDAY

Murphy, Acute Disorders of the Heart: Their Diagnosis and Treatment.
Hugh Wilson, New Haven, Conn., Tumors of the Small Bowel.
Paul, Roentgen Examination in Chronic Joint Disease.
Goettsch, Certain Conditions Which Interfere with Growth, Section II.
Norton J. Wood, Washington, D. C., Bone and Root Resorption.
Bickel, Treatment of Complications of Fractures.
O'Connor, Modern Attitude of Treatment of Carcinoma of Prostate Gland.

ARKANSAS

Dr. Roberts Dean of Medical School.—Dr. Joseph T. Roberts, adjutant professor of medicine at Georgetown University School of Medicine and chief medical officer of the department of medicine at Gallinger Hospital, Washington, D. C., was appointed, effective Jan. 1, 1948, dean of the University of Arkansas School of Medicine, Little Rock, and head of the department of medicine. He is a graduate of Tulane University of Louisiana School of Medicine, New Orleans.

CONNECTICUT

Personal.—The Danielson Chamber of Commerce has presented its first annual Civic Achievement Award to Dr. Frank P. Todd, a practicing physician in that community since 1889.

Student Members of State Society.—The Governing Council of the Connecticut State Medical Society recently approved applications for membership of eighty-one medical students. All residents of Connecticut, they are enrolled in medical schools throughout the country, and their membership entitles them to limited participation in the society's activities. Admission of the eighty-one new members brings the total student membership in the society to one hundred ninety.

Residency Training Program in Neuropsychiatry.—A Veterans Administration Residency Training Program in Neuropsychiatry, under the Dean's Committee, Yale University School of Medicine, New Haven, will open on July 1. The program will stress training in dynamic psychiatry with emphasis on treatment and prevention, and it will offer the required training in clinical neurology. It is designed to prepare the resident for certification in psychiatry by the American Board of Neurology and Psychiatry. Training will be given at the Newington Veterans Administration Hospital, a general hospital of 352 beds with a psychiatric service of 45 beds; at the Veterans Administration Hospital, Northampton, Mass., with 1,137 beds for psychotic patients, and in the Yale Department of Psychiatry and Mental Hygiene. The inclusion of the Veterans Administration Mental Hygiene Clinic, Hartford, is under consideration.

Appointments will be made annually. Candidates may elect a one, two or three year course depending on their board requirements. All appointments are subject to approval by the Resident Review Board. Applications may be obtained from Frederick C. Redlich, M.D., Chairman, Dean's Sub-Committee in Neuropsychiatry, Yale University School of Medicine, 333 Cedar Street, New Haven, Conn.

GEORGIA

Dr. Sellers Named State Health Director.—Dr. Thomas F. Sellers, director of laboratories, State Department of Public Health, has been appointed health director of the state succeeding Dr. Thomas F. Abercrombie, resigned. Dr. Sellers is a graduate of Emory University School of Medicine, Atlanta, 1932, and was elected first secretary to the Georgia Association of Pathology in 1935.

ILLINOIS

New Mobile X-Ray Unit.—The Winnebago County Tuberculosis Association after a delay of nearly two years has purchased a bus-type chest x-ray unit to replace the trailer-type unit in use for the past four years. The mobile unit is a tuberculosis case-finding device. The bus is 28½ feet long, 8 feet wide and 9 feet 9 inches high.

Record Birth Rate.—For the second successive year the Illinois birth rate has reached a new high. Dr. Roland R. Cross, state director of public health, announced that 191,866 live births were registered in Illinois in 1947 with a corresponding rate of 23.3 births for each thousand inhabitants. Significant in the 1947 record is the gain in saving lives of young babies. The 1947 death rate of 28.4 deaths of babies under 1 year of age for every thousand births is a new record. Maternal death rate figures are as yet incomplete. The general death rate for the state is 11.2 per thousand.

Chicago

The McArthur Lecture.—Dr. Alfred Blalock, Baltimore, will deliver the Lewis Linn McArthur Lecture of the Frank Billings Foundation at the Palmer House Friday, February 27, at 8 p.m. on "Surgical Treatment of Congenital Cardiovascular Defects."

Research in Poliomyelitis.—A grant of \$25,692 has been awarded to the University of Chicago by the National Foundation for Infantile Paralysis for the study of biochemical phases of poliomyelitis. The project will be under the supervision of Earl A. Evans Jr., Ph.D., professor and chairman of the department of biochemistry.

Dr. Fred Koch Dies.—Fred C. Koch, Ph.D., Frank P. Hixon distinguished service professor emeritus of biochemistry at the University of Chicago, died January 26 at his home, aged 71, of cerebral hemorrhage. Internationally recognized for his work on hormones, enzymes and vitamins, he had been associated with Armour and Company as director of biochemical research since his retirement from the university in 1941.

Lecture on Surgery for Sanity.—Dr. Paul C. Bucy, professor of neurology and neurologic surgery, University of Illinois School of Medicine, will speak on "Surgery for Sanity" February 13 at Younkers Restaurant, following an initiation dinner of the Northwestern University chapter of Sigma Xi, national honorary science society. The program is open to members and friends of Sigma Xi. Dinner reservations may be obtained by calling University 1900, extension 415.

Cancer Refresher Courses.—The fourth Cancer Refresher Course, sponsored by the Illinois Division, American Cancer Society, Inc., in cooperation with the Illinois State Medical Society, was held January 16-23 in Chicago with forty physicians from various parts of the state attending. The programs were held in the medical schools of Northwestern University, University of Illinois, Loyola University, University of Chicago and Michael Reese Hospital. The fifth course will be held the week of March 15-19. Physicians desiring to attend should apply to the president or secretary of their county medical society.

Course on Cancer of the Oral Cavity.—A graduate course on recent advances in cancer of the oral cavity will be offered by the University of Illinois College of Dentistry, in cooperation with the Illinois division of the American Cancer Society, Inc. The course will be offered over a period of six consecutive Wednesdays from 7:30 to 9:30 p.m. beginning March 31. Dr. Bernard G. Sarnat, acting head of the department of oral and maxillofacial surgery, will be in charge of the course, which is planned to be of value to dentists, general practitioners, oral and maxillofacial surgeons and otolaryngologists. Tuition for the course has been waived through the courtesy of the Illinois division of the American Cancer Society. For information address Dr. Isaac Schour, associate dean in charge of the post-graduate school, 808 South Wood Street, Chicago 12.

Personals.—Dr. Leo M. Czaja resigned January 7 after twelve years as general superintendent of the City of Chicago Municipal Tuberculosis Sanitarium. Others who have resigned are Dr. Camillo E. Volini, superintendent of clinics, and Drs. Richard M. Davison and John J. Brosnan, who were staff

physicians.—Dr. Herman L. Kretschmer gave the Poynter Lecture at the University of Nebraska, Omaha, January 12 on "The Present Status of the Prostatic Problem." He also addressed a mixed audience of physicians and laymen in the evening on "Progress in Cancer."—Dr. Robert A. M. Esser, Chicago, has been appointed assistant director of the Behavior Clinic of the Criminal Court of Cook County.—Olaf Bergeim, Ph.D., has been promoted to the rank of professor of biological chemistry at the Chicago Professional Colleges of the University of Illinois.—Dr. Edward L. Compere, associate professor of bone and joint surgery, Northwestern University Medical School, spoke on "Fusion of the Spine After Excision of Intervertebral Disks" on February 11 before the Havana (Cuba) Medical Society. Dr. Compere plans to go to the Pacific area this summer as a special civilian consultant. He will visit army hospitals, operate, study problem cases and review the orthopedic services.

INDIANA

Emergency Service Plan.—The physicians of Greencastle are offering emergency service twenty-four hours a day through the Doctors' Exchange, which will locate the doctor on duty at that time. According to the plan, two doctors are on duty from 8 a. m. each Sunday to the following Sunday. One doctor is available at all times, and his co-worker will take calls in his absence. The service is offered to those who need a doctor and who are not able to locate the family physician.

Dermatosyphilology Foundation.—Inauguration of the Alembert Winthrop Brayton Foundation for the advancement of knowledge of dermatosyphilology was held Dec. 6, 1947 at Indianapolis General Hospital. Dr. Brayton was the first professor of the subject at the Indiana University School of Medicine. Those furthering the foundation hope to raise \$50,000 to supply added personnel and equipment for training, all of which may not be available from the city budgetary funds made available to the hospital.

Mobile Health Education Unit.—The Marion County Cancer Society has instituted a Mobile Health Education Unit which had its trial run during the five days of the Indiana State Fair in September, 1947, when it distributed 5,000 pieces of educational literature and showed six cancer movie films to 1,386 persons. The unit will cover a twelve month program of cancer education in the nine townships of Marion County this year. It will be stationed in each community in the hope that every person will accept the opportunity to have a better understanding of cancer. The unit is under the supervision of a trained health educator, Dorothy B. Howard, a graduate of the University of Michigan School of Public Health, Ann Arbor.

MARYLAND

A Demonstration Mental Hygiene Clinic.—On the campus of the University of Maryland, College Park, on January 19, a "demonstration" mental hygiene clinic was opened to serve, free of charge, residents of Prince Georges County who need psychiatric help. This is said to be the first clinic of this particular kind, made possible by the National Health Act in 1947, in the \$7,500,000 program of the U. S. Public Health Service to combat mental diseases by preventive medicine. Two similar clinics will be set up later in the middle west and on the west coast. Dr. Mabel L. Ross, psychiatrist, will head the clinic, which will also have a full time psychologist, two social workers and a public health nurse. Patients will be referred to the clinic by private physicians, courts, welfare agencies or schools. It is reported that the clinic will turn this community into a laboratory for the control and study of mental diseases from a community standpoint. The clinic is expected to help in the following work: advise local physicians when consultation with private practicing psychiatrists is not available; provide consultation service to the courts; provide outpatient treatment to persons in need of hospital care, particularly those in the early stages of mental illness; help schools in solving behavior disorders, and help social agencies to solve the emotional problems of children. The normal capacity of the clinic will be about 300 patients.

MASSACHUSETTS

Society News.—The Norfolk District Medical Society has a newly organized Woman's Auxiliary, with Mrs. Leighton F. Johnson as its first president.

Public Health Lectures.—Mount Auburn Hospital, Boston, will conclude its Public Health Lectures in the Margaret Jewett Hall with the following: February 18, Dr. David Hurwitz, Boston, "Modern Management of Diabetes"; February 25, Dr. Ward I. Gregg, Boston, "Abdominal Pain—Its Significance." These free lectures, open to the public, are given Wednesday evenings at 8:15.

Dedicate Anniversary Volume to Dr. Minot.—Following a testimonial dinner in 1945 on the sixtieth birthday of Dr. George R. Minot, Boston, his colleagues decided to prepare an anniversary volume to be published by colleagues, co-workers and former associates in honor of Dr. Minot. Invitations to contribute articles were extended to a worldwide group of workers in the field of hematology and to others who had been associated with Dr. Minot. The anniversary volume appears as the January 1948 issue of *Blood; the Journal of Hematology* and was made possible by gifts from Lederle Laboratories and Eli Lilly and Company. The committee which made the arrangements comprised William Dameshek, Boston, chairman; William B. Castle, Boston; Russell L. Haden, Cleveland; Edward B. Krumbhaar, Philadelphia; Oliver H. P. Pepper, Philadelphia; George H. Whipple, Rochester, N. Y.; L. J. Wits, Oxford, England; E. Meulengracht, Copenhagen, Denmark; R. M. Suarez, Puerto Rico, and F. H. L. Taylor, secretary, Boston. Among those whose names are signed to contributed articles are William P. Murphy, Cyrus C. Sturgis, L. S. P. Davidson of Edinburgh, Scotland, Bertel von Bonsdorff of Finland, Drs. Haden, Minot and Tom D. Spies.

MICHIGAN

Crane Lecture.—The annual A. W. Crane memorial lecture in Kalamazoo will be given February 17 by Dr. James T. Case, professor emeritus of radiology at Northwestern University Medical School, Chicago, before the Kalamazoo Academy of Medicine.

Michigan Pathological Society.—The next meeting of the Michigan Pathological Society will be at Henry Ford Hospital, Detroit, February 14. Visiting speakers are Drs. William S. Hoffman, Chicago, "Photoelectric Methods in Clinical Chemistry" and Frederick W. Sunderman, Philadelphia, "Protective Measures in Handling Radioactive Materials in Clinical Laboratories." The society at its annual meeting in December elected Dr. Arthur A. Humphrey, Battle Creek, president, Dr. Donald H. Kaump, Detroit, president-elect, and Dr. Walter A. Stryker, Wyandotte, secretary-treasurer.

Annual Postgraduate Clinical Institute.—The second annual Michigan Postgraduate Clinical Institute will be held March 10 to 12 at the Book-Cadillac Hotel, Detroit, under the sponsorship of the Michigan State Medical Society. Forty-nine outstanding clinicians will present a concentrated three day postgraduate course covering the newest developments in medicine, surgery, obstetrics, pediatrics, dermatology, ophthalmology and general practice. Two evening sessions will be held, the Wednesday night presentation being a question period and the Thursday evening program a panel discussion on "First Aid to the Acutely Injured Patient." All members of the American Medical Association and the Canadian Medical Association are cordially invited to attend. There is no registration fee.

NEW YORK

Personal.—Thorndike Saville, dean of New York University's College of Engineering since 1936, has been appointed to serve on the state's Public Health Council until Jan. 1, 1953. The council of eight members advises the commissioner of health on matters relating to the preservation and improvement of public health, including additions and amendments to the state sanitary code.

New York Tuberculosis and Health Association.—Dr. Kendall Emerson, managing director of the National Tuberculosis Association for nineteen years until his retirement on Dec. 31, 1947, was recently elected president of the New York Tuberculosis and Health Association. The association's annual health conference will be held at the Hotel Pennsylvania on March 9.

Opportunity for Psychiatric Training.—The Department of Mental Hygiene of the State of New York, State Office Building, Albany, is interested in making contact with some of the many young physicians who will be released from the armed forces within the next few months and who desire an opportunity for psychiatric training in the institutions of that department of the state.

Free Hospital Care.—Since New York State initiated its tuberculosis control program a year and a half ago, every one of its fourteen million inhabitants is assured prompt and complete hospital care and treatment free of charge. The state is offering financial aid to counties and cities for care and treatment of patients with tuberculosis, including free roentgen examination of the chest. Besides producing and distributing BCG vaccine for the prevention of tuberculosis, the state department of health has undertaken basic research on tuberculosis.

New York City

Portrait of Dr. Palmer.—A portrait of Dr. Walter W. Palmer, Bard professor of medicine at Columbia University College of Physicians and Surgeons, has been presented to the college by members of the staff, friends and fellow physicians who served under Dr. Palmer. He has been associated with Columbia for twenty-seven years and will retire this spring.

Study of Acute Cerebral Hemorrhage.—The neurologic service of Mount Sinai Hospital is asking physicians who see patients with acute cerebral hemorrhage to communicate at once with the admitting physician of the hospital, who will be glad to admit suitable patients. The hospital is interested in the study and treatment of patients with acute cerebral hemorrhage.

Cornell Medical College Alumni Day.—Cornell University Medical College celebrates its fiftieth anniversary this year, and Alumni Day will be held on March 11 at the college. The program will include registration in the morning, with luncheon at the Nurses' Residence, to be followed by the business meeting and a schedule of rounds and conferences in all departments. Dinner will be served at the Roosevelt Hotel, and dancing will conclude the day.

Long Island Medical College.—A meeting for the reestablishment of the Manhattan and Bronx Chapter of the Long Island College of Medicine was held in January. Dr. A. W. Martin Marino, Brooklyn, president of the Alumni Association, was guest speaker. The campaign for the new Long Island Medical Center was discussed. Officers elected were Dr. Benjamin Jablons, president, Dr. Elias Rauch, secretary, and Dr. Philip Kassen, treasurer.

Appoint Clinical Professor of Medicine.—Dr. David Seegal, New York, has been appointed professor of clinical medicine at the Long Island College of Medicine. Dr. Seegal, who is associated with the newly formed Maimonides Hospital in Brooklyn, formerly served with the College of Physicians and Surgeons of Columbia University as director of the research program on long term diseases at Goldwater Memorial Hospital. He is a graduate of Harvard Medical School, Boston; in 1942 he was consultant on epidemic diseases to the Secretary of War.

Cooper Union Forum Lectures.—"Whether or not the methods of science can ever be applied effectively to the control of human behavior" will be the basic inquiry of the Cooper Union Forum series, "The Sciences of Life," which began February 3 and will continue on Tuesday evenings through April 27 in the Great Hall of the Cooper Union at 8:15 p.m. Evolution, heredity, behavior, growth both physical and mental and the relationships between man and his environment will be analyzed in the light of recent scientific discoveries and atomic research by leading zoologists, psychologists, sociologists and educators. All lectures are open to the public without charge.

NORTH DAKOTA

Cerebral Palsy Demonstration Clinic.—The North Dakota Chapter of the National Society for Crippled Children and Adults in cooperation with the North Dakota Medical Association's Crippled Children's Committee and the Crippled Children's Services of the North Dakota Public Welfare held a cerebral palsy clinic in Jamestown Dec. 1-2, 1947. The demonstration and teaching clinic, devoted to conference with attending physicians and diagnosis of select cases of cerebral palsy, was conducted by Dr. Meyer A. Perlstein, Chicago. The clinic was attended by physicians, parents, nurses, therapists and social workers. To house expanding services the executive committee of the state chapter of the society has voted to enlarge the Crippled Children's School at Jamestown. A new Easter seal wing, now under construction, will enable the school to double its enrolment.

OHIO

New Department of Microbiology.—Western Reserve University School of Medicine has set up a department of microbiology with Lester O. Kramptz, Ph.D., associate professor of biochemistry in the department of biochemistry, as professor and head of the new department. Before coming to Western Reserve, Dr. Kramptz did research on the physiology of bacteria at the Rockefeller Institute for Medical Research in New York and at Iowa State College, Ames, where he obtained his degree in 1942.

Dr. Meiling Named Air Force Consultant.—Dr. Richard L. Meiling, Columbus, secretary of the Committee on National Emergency Medical Service of the American Medical Association, has been appointed expert consultant in obstetrics and gynecology by the U. S. Air Force, Major Gen. Malcolm C. Grow, the Air Surgeon, has announced. A graduate of the

University of Munich in Germany, Dr. Meiling served in Europe with the Air Force during the war as a special assistant to the Air Surgeon and was awarded the Legion of Merit, the Bronze Star and the National Defense Medal. He will be a special consultant to the Station Hospital at Lockburn Air Force Base, Columbus.

New Medical Director.—Dr. Lerleen C. Hatch, Akron, has been appointed medical director of the Goodyear Tire & Rubber Company. Dr. Hatch, who came to Akron in 1942 to direct the hospitals at Goodyear aircraft plants, has been assistant medical director of the parent company's Akron plants since November 1946. In his new position he has charge of the company's Akron hospitals and staff and will also be responsible for direction of medical policies for all Goodyear operations. A graduate of Jefferson Medical College of Philadelphia in 1930, he became chief resident physician of the University of Pennsylvania Hospital, Philadelphia. Two years later he was named chief medical officer, a position he held for ten years.

OREGON

Cancer Detection Center.—The state's first cancer detection center at Coos Bay, which opened in October, is already well booked in advance. Known as the Coos-Curry County Cancer Screening Center, it is staffed by members of the Coos-Curry Medical Society, who serve in rotation at the weekly sessions. Other organizations that play a major part in the organization and operation of the center are the Oregon State Board of Health, Oregon State Medical Society, County Health Department and Oregon State Division of the American Cancer Society, Inc.

TEXAS

Lectures on Progress in Medicine.—The postgraduate division of the University of Texas Medical Branch, Galveston, will present a program on "Advances in Medical Science with Their Clinical Interpretations and Applications" in Randall Hall in the outpatient building Feb. 23-29, beginning at 9:45 a.m. The program is being offered by the department of internal medicine and the preclinical departments. Guest speakers include Drs. John H. Lawrence, Berkeley, Calif.; George W. McCoy, New Orleans; Carl V. Moore, St. Louis, and Stuart Mudd, Philadelphia.

Public Health Award.—The Dallas Health Museum has established an annual award for the individual group making the greatest contribution to public health in Texas. The first presentation of the award, to be known as the Dallas Health Museum Award, will be made in April 1948 during the Texas State Medical Association convention in Houston. Recommendations for the award may be made by any health agency or other group, the only restriction being that the candidates' contributions must be made in Texas to advance the cause of public health in the state. Names of candidates and their achievements must be submitted to the museum by April 1 of each year.

Research on Studies of Alcoholism.—A grant of \$6,000 has been made to the Biochemical Institute of the University of Texas, Houston, by the Research Council on Problems of Alcohol for research on individual patterns of metabolism to determine the possible relationship of body processes to susceptibility to alcoholism. All types of persons will be subjects for this study. Dr. Anton J. Carlson, Chicago, president of the council, explained that this research program will fill a definite gap in studies on alcohol by determining whether there are "any unique physiological characteristics in various tissues of the body which make some individuals more prone to problem drinking than others." A prior grant of \$30,000 a year for five years was made to Cornell University Medical College-New York Hospital for similar research.

VIRGINIA

Dr. Miller Honored.—Friends of Dr. Roshier W. Miller, Richmond, presented his portrait to the Medical College of Virginia January 30. A member of the faculty of the college since 1894, when he became an instructor in the school of pharmacy, Dr. Miller is emeritus professor of materia medica and therapeutics. He has been a member of the Alumni Association of the medical college since graduation, serving for three years as president and three years as secretary and alumni trustee. Last year he was elected trustee emeritus for the Alumni Association. Dr. Miller was a member of the Richmond school board for twenty-six years and served as chairman for eighteen years. Dr. J. Morrison Hutcheson presided at the presentation of the portrait, which was presented by Dr. W. Lowndes Peple with William T. Sanger, Ph.D., president, accepting it in behalf of the college.

GENERAL

Society Elections.—Ralph I. Straus, director, R. H. Macy, Inc., has been elected president of the National Multiple Sclerosis Society, which is about to undertake a campaign to increase its membership of 7,500. The society, formerly the Association for the Advancement of Research in Multiple Sclerosis, was founded in 1946 to stimulate research, to act as a clearing house of information and to educate the public on the problems of multiple sclerosis.

Publication to Honor Osler.—The *Archives of Internal Medicine* proposes to publish in the near future a special issue devoted to celebrating the one hundredth anniversary of the birth of Sir William Osler. The editors of the *Archives* are exceedingly anxious to have informal photographs of Sir William Osler to be used in illustrating some of the material to appear in that issue. Those having such material available may send either the original photograph or a good print to Dr. Newell C. Gilbert, 535 North Dearborn Street, Chicago 10. All photographs will be returned in good condition.

Grants in Aid for Research on Sex Problems.—The Committee for Research in Problems of Sex of the National Research Council has announced that requests for grants-in-aid during the fiscal period July 1, 1948 to June 30, 1949 will be received until March 15, 1948. Application blanks may be obtained by addressing the secretary, Division of Medical Sciences, National Research Council, 2101 Constitution Avenue, Washington 25, D. C. Dr. George W. Corner, director of the department of embryology, Carnegie Institution of Washington, Baltimore, is chairman of the committee.

Dr. Diamond Receives Pediatric Award.—Dr. Louis K. Diamond, director of the hematology research laboratory at the Children's Hospital Medical Center, Boston, received the Mead Johnson Award for his contribution to the advancement of pediatric medicine from the American Academy of Pediatrics at ceremonies at the annual meeting in Dallas in December. Dr. Diamond's contribution was made in the treatment and study of blood disease of children and the development of the Rh blood-grouping laboratory in Boston. A graduate of Harvard Medical School, Boston, 1927, Dr. Diamond has been a member of the medical staff of Children's Hospital since 1930.

Golf Tournament at Annual Session.—The American Medical Golfing Association will hold its thirty-second tournament at Olympia Fields Country Club, Chicago, on Monday, June 21, in connection with the Annual Session of the American Medical Association. The American Medical Golfing Association will have the use of two 18 hole courses and the entire clubhouse, according to Dr. Charles E. Shannon, Chicago, chairman of the Arrangements Committee. Applications for fellowship in the American Medical Golfing Association are available by writing the secretary, Bill Burns, 2020 Olds Tower, Lansing 8, Mich.

New Tuberculosis Fellowships.—Establishment by the National Tuberculosis Association of teaching and research fellowships in tuberculosis has been announced by Dr. Esmond R. Long, director of the Division of Research. The annual stipends will range from \$2,400 to \$3,200, and provision will be made for laboratory fees and similar incidental expenses. The fellowships will be limited to graduates of American schools for teaching and investigation in the United States. Applications will be considered in the fields of pathology and bacteriology, clinical medicine, epidemiology and social and statistical research. Applicants may elect the institutions in which they wish to study. Persons interested should write to Dr. James E. Perkins, managing director, National Tuberculosis Association, 1790 Broadway, New York 19, for further information.

American Allergy Foundation.—Clyde Williams, director of Battelle Memorial Research Institute, Columbus, Ohio, has been elected president of the American Allergy Foundation, national organization for the support of scientific research and public education in allergy. Dr. Williams is also president of the American Institute of Mining and Metallurgical Engineers. The foundation is initiating a series of \$3,500 grants in aid of research projects expected to total more than \$25,000 this year. The foundation has granted \$3,500 to Wilbur A. Selle, Ph.D., professor of physiology at the University of Texas Medical Branch, Galveston, for his study, "The Role of Histamine and Other Agents in the Production of Anaphylaxis and Allergic Reactions," in which radioactive isotopes will be used for the first time in research on allergy.

First International Poliomyelitis Conference.—A preliminary announcement outlining plans for the first International Poliomyelitis Conference to be held in New York, July 12-17, has been sent to recognized professional persons,

inviting them to attend as member delegates. Invitations have been extended also through the State Department to more than sixty nations to send official delegates. In addition, some twenty other medical and scientific authorities from abroad will participate in the program. The first response from all countries that have been invited to participate in the program has been outstanding. According to Dr. Hart E. Van Riper, medical director of the National Foundation for Infantile Paralysis, many in this country and abroad declare that the problem has become so serious that poliomyelitis must be considered on an international basis with complete pooling now and in the future of all information available. Dr. Van Riper, who is general chairman of the conference, has announced the presiding officers and subjects of the plenary session as follows: Oswaldo P. Campos, Rio de Janeiro, Brazil, "The Importance of Poliomyelitis as a World Problem"; Rustin McIntosh, New York, "Poliomyelitis: The Early Stage"; Robert Kuo-Seng Lim, surgeon general, National Defense Medical Center, Shanghai, China, "The Management of Poliomyelitis: The Early Stage"; Arthur Steindler, Iowa City, "Poliomyelitis: The Convalescent Stage"; Arvid Wallgren, Stockholm, Sweden, "The Management of Poliomyelitis: The Convalescent Stage"; Carlos S. Ottolenghi, Buenos Aires, Argentina, "The Management of Poliomyelitis: The Late Stage"; James E. Paulin, Atlanta, Ga., "Bulbar Poliomyelitis"; Pierre L. LePine, Paris, France, "Immunology and Chemotherapy in Poliomyelitis"; Harry S. Mustard, New York, "The Public Health Aspects of Epidemic Poliomyelitis," and Thomas Parran, Washington, D. C., "Poliomyelitis Throughout the World." Official government delegates will present reports on poliomyelitis problems in their countries.

The plenary sessions will be preceded by the opening meeting presided over by Dr. Irvin Abell, Louisville, Ky. Delegates will be welcomed by Basil O'Connor, president of the National Foundation for Infantile Paralysis. Foreign delegates will be introduced by Dr. Morris Fishbein, Editor of THE JOURNAL. Among the other distinguished professional authorities from abroad who will participate in the program are: H. J. Seddon, Oxford, England; J. H. S. Gear, Johannesburg, South Africa; Herman Romero, Santiago, Chile, and S. van Creveld, Amsterdam, Netherlands; Fritz Buchtal, Copenhagen, Denmark; Juan Farill, Mexico, D. F., Mexico; Alfonso Montagne, Lima, Peru; Sven Gard, Stockholm, Sweden; G. Paredes, minister of public health, Republic of Panama, and Leslie N. Silverthorne, Toronto, Canada.

FOREIGN

Medical Week in Hungary.—The Hungarian Medical Trade Union is arranging to celebrate Medical Week September 4-12 as a part of jubilee celebrations of the Hungarian nation in commemoration of the one hundredth anniversary of the Hungarian War of Liberty. The Hungarian medical community cordially invites eminent medical personalities and practitioners of foreign countries to attend and participate. Further information may be obtained by writing the general secretary of the Hungarian Medical Trade Union, Budapest, V. Nádor Utca 32.

CORRECTION

Exotic Diseases.—The case of kala-azar referred to in the first sentence of the editorial in THE JOURNAL, January 10, page 111, was observed at the Army Air Force Regional Station Hospital, San Antonio, Texas, and not in New York City as was stated in the editorial.

Marriages

PEYTON RANDOLPH EVANS JR., Washington, D. C., to Mrs. Jeannette Payne Traonmilin of Wynnewood, Pa., recently.

WILLIAM F. KUHN II to Miss Erma Kathleen Mace, both of Kansas City, Mo., in Marion, Ark., Sept. 5, 1947.

JOHN DANOS LEIDHOLT, Pasadena, Calif., to Miss Priscilla Madelyn Crim of Storrs, Conn., in September 1947.

RUPERT VON TRAPP, Stowe, Vt., to Miss Henrietta Lajoie of Fall River, Mass., Sept. 17, 1947.

CARL D. MAKART, Chicago, to Miss Laurel E. Gourlay of Sydney, Australia, Dec. 27, 1947.

ROBERT B. HOENIG, New York, to Miss Janice Asheim of Forest Hills, Oct. 3, 1947.

Deaths

William Pepper * Philadelphia, for thirty-three years dean at the University of Pennsylvania School of Medicine, died at the University Hospital Dec. 3, 1947, aged 73, of coronary thrombosis. Dr. Pepper was born in Philadelphia May 14, 1874. He was graduated from the College of Arts and Sciences of the University of Pennsylvania in 1894 and from the department of medicine in 1897. After a year as resident physician at the Philadelphia General Hospital, he began the practice of medicine with his father, Dr. William Pepper. In 1899 he joined the faculty of his alma mater, serving first as assistant instructor in clinical medicine, then instructor and later assistant professor of pathology. In 1912 Dr. Pepper was appointed dean, in which capacity he served for thirty-three years, retiring in 1945 with the title of dean emeritus. He was a fellow of the College of Physicians of Philadelphia, a member of the American Association of Pathologists and Bacteriologists, American Academy of Natural Sciences, American Philosophical Society and Philadelphia Pathological Society. From 1917 to 1927 Dr. Pepper was a member of the Council on Medical Education of the American Medical Association and in 1920-1921 president of the Association of American Medical Colleges. He was a trustee and from 1929 to 1943 was president of the board, Free Library of Philadelphia, serving on many of its committees for several years. He was a trustee of the University of Pennsylvania and for many years an associate editor of the *University Bulletin*. During World War I he served as lieutenant colonel in the medical corps of the U. S. Army and as commanding officer of Base Hospital 74. He received an honorary degree of doctor of science from the University of Pennsylvania and an honorary degree of doctor of laws from Temple University. The General Alumni Society at Pennsylvania presented Dr. Pepper with an Alumni Award of Merit in 1942.

Ralph Edward McDonnell * New Haven, Conn.; born in New Haven, Jan. 26, 1894; Yale University School of Medicine, New Haven, 1920; joined the faculty of his alma mater as clinical assistant in dermatology in 1921, later clinical instructor, assistant clinical professor and associate clinical professor of dermatology; president and formerly secretary of the New Haven County Medical Society; member of the American Academy of Dermatology and Syphilology; member of the New England Dermatological Society, of which he had been secretary-treasurer; served during World War I; surgeon in the U. S. Public Health Service Reserve; affiliated with Griffin Hospital in Derby, and the Hospital of St. Raphael; attending physician in dermatology, Grace-New Haven Community Hospital University Service; died at his home in Northford Nov. 24, 1947, aged 53, of embolism.

John Nathan Simpson, Morgantown, W. Va.; born in Mason, W. Va., March 19, 1869; Johns Hopkins University School of Medicine, Baltimore, in 1902; member of the American Medical Association; fellow of the American College of Physicians; past president of the West Virginia State Medical Association, of which he had been an honorary member; honorary member and past president of the Monongalia County Medical Society; served during World War I; in 1935 retired with the title of dean emeritus from West Virginia University School of Medicine, where he had been dean of the Medical faculty since he organized it in 1902; professor of physiology at the school from 1902 to 1920 and later professor of medicine; director of the hygienic laboratory of the state department of health from 1913 to 1917; died Nov. 23, 1947, aged 78.

Ernest Brennan Bradley * Lexington, Ky.; born in Lexington May 16, 1877; University of Michigan Medical School, Ann Arbor, 1904; specialist certified by the American Board of Internal Medicine; member of the American Clinical and Climatological Association; master, past president and at one time chairman of the board of governors, American College of Physicians; past chairman, vice chairman and secretary of the medical section of the Southern Medical Association; served during World War I; formerly city bacteriologist and part time county health officer; for many years chairman of the county health department; affiliated with Good Samaritan Hospital and St. Joseph's Hospital, where he died Nov. 12, 1947, aged 70, of hypertension and cerebral hemorrhage.

Frank Alexander Sharpe, Greensboro, N. C.; born in Greensboro, Sept. 27, 1889; University of Pennsylvania School of Medicine, Philadelphia, 1916; fellow of the American College of Surgeons; member of the American Medical Association and the South Atlantic Association of Obstetricians and Gynecologists; president of the Medical Society of the State of North

Carolina; past president of the Guilford County Medical Society; for six years a member of the state board of medical examiners; served during World War I; affiliated with Wesley Long Hospital, Sternberger Hospital for Women and Children and the L. Richardson Memorial Hospital; died Dec. 21, 1947, aged 58, of coronary thrombosis.

William Joseph Pelletier * Turners Falls, Mass.; born in Shelburne, Mass., June 10, 1897; Tufts College Medical School, Boston, 1920; associate examiner of the Eastern District of Franklin County from 1935 to 1943, when he became medical examiner; past president of the Franklin District Medical Society; fellow of the American College of Surgeons; served during World War I; physician to the draft board during World War II; formerly school physician for the town of Montague and member of the board of health; affiliated with Franklin County Public Hospital in Greenfield and Farren Memorial Hospital in Montague City, where he died Nov. 16, 1947, aged 50, of hypertensive heart disease.

Francis Chappelle Goodwin, El Paso, Texas; born in La Para, Texas, Nov. 19, 1900; University of Virginia Department of Medicine, Charlottesville, 1926; member of the American Medical Association and the American Academy of Orthopedic Surgeons; fellow of the American College of Surgeons; served during World War II; affiliated with the El Paso Masonic, Southwestern General, Hotel Dieu, Sisters' and El Paso City-County hospitals; chief surgeon for the Carrie Tingley Hospital for Crippled Children in Hot Springs, N. Mex.; died recently, aged 46, in an airplane crash.

Avedis Der Avedisyan, Boston; Tufts College Medical School, Boston, 1896; member of the American Medical Association; died Nov. 16, 1947, aged 75, of coronary sclerosis.

Julian Crawford Baker, Hawkins, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1897; died in the Lutheran Hospital, Eau Claire, recently, aged 73, of streptococcal infection, sclerosis of the adrenals with hemorrhage and diabetes mellitus.

Edgar Buren Baughn, Colquitt, Ga.; College of Physicians and Surgeons, Baltimore, 1904; member of the American Medical Association; served as mayor of Colquitt; died in the State Hospital at Milledgeville, recently, aged 68, of parkinsonism.

Oscar E. Bennett, Hayward, Wis.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1900; died recently, aged 72.

William Eli Biggs, Delight, Ark.; American Medical College, St. Louis, 1885; died in Little Rock Oct. 31, 1947, aged 85.

William Michael Boguskie, Hearne, Texas; Baylor University College of Medicine, Dallas, 1929; member of the American Medical Association; died Nov. 15, 1947, aged 47, of angina pectoris.

Henry Boss, Holland, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887; died Nov. 17, 1947, aged 84, of cerebral hemorrhage.

William Miller Brien * Orange, N. J.; University of the City of New York Medical Department, New York, 1891; Spanish-American War veteran; first mayor of West Orange; deputy physician of Essex County from 1918 to 1927, when he became assistant medical examiner of the county, resigning in 1935 to become health officer of Orange; affiliated with the Newark Eye and Ear Infirmary in Newark; died Nov. 19, 1947, aged 85, of coronary thrombosis.

Fabian Joseph Burke * St. Louis; St. Louis University School of Medicine, 1929; died in St. John's Hospital Nov. 15, 1947, aged 43, of injuries received when struck by an automobile.

George H. Caldwell * Lakewood, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; member of the Michigan State Medical Society; for many years affiliated with the Upjohn Pharmaceutical Company in Kalamazoo, Mich.; died Nov. 5, 1947, aged 73, of heart disease.

Jennie M. Callias, Pasadena, Calif.; Barnes Medical College, St. Louis, 1904; at one time practiced in Omaha, where she served on the school board and city welfare board; died Nov. 10, 1947, aged 78, of arteriosclerotic heart disease and diabetes mellitus.

William Henry Carr, Holly, Mich.; Chicago Homeopathic Medical College, 1902; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; member of the American Medical Association; died in St. Joseph Mercy Hospital, Pontiac, Nov. 16, 1947, aged 71, of cerebral arteriosclerosis.

Albert Charles Clauser, Delphi, Ind.; Medical College of Indiana, Indianapolis, 1905; member of the American Medical Association; for many years county health officer; served during World War I; affiliated with St. Elizabeth Hospital and the Lafayette Home Hospital in Lafayette; died Nov. 12, 1947, aged 66, of cardiac thrombosis.

John Waldo Connaway, Columbia, Mo.; University of Missouri School of Medicine, Columbia, 1891; died recently, aged 87, of senility.

Lucy C. Vrooman Cooper, Hauula, Hawaii; Cooper Medical College, San Francisco, 1906; died recently.

Marshall Albert Cousens * Los Angeles; University of Illinois College of Medicine, Chicago, 1938; interned at St. Catherine's Hospital in East Chicago, Ind.; served a residency at the John D. Archbold Memorial Hospital in Thomasville, Ga., Parkway Sanitarium and the Illinois Eye and Ear Infirmary in Chicago, where he practiced; served during World War II; died Nov. 22, 1947, aged 36, of coronary thrombosis.

Albert Loyal Crane, Evansville, Ind.; Long Island College of Medicine, Brooklyn, 1928; specialist certified by the American Board of Psychiatry and Neurology, Inc.; member of the American Medical Association and of the American Psychiatric Association; part owner and director of Clearview Hospital; consultant at the Welborn-Walker and St. Mary's hospitals; died in New York Nov. 17, 1947, aged 54.

Frank Elmer David, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; also a dentist; member of the American Medical Association; fellow of the American College of Surgeons; for many years affiliated with St. Joseph's and St. Luke's hospitals; died in Evanston (Ill.) Hospital, Dec. 5, 1947, aged 76, of cerebral hemorrhage and bronchopneumonia.

Samuel Delano, New Britain, Conn.; Harvard Medical School, Boston, 1883; died in the Hartford (Conn.) Hospital Nov. 8, 1947, aged 89, of aortic stenosis.

Charles August Dieter * Harper, Kan.; University Medical College of Kansas City, Mo., 1913; also a graduate in pharmacy; served as secretary of the Harper County Medical Society; an officer during World War I; county health officer; died in Kansas City recently, aged 63, of carcinoma of the liver.

Henry Beherald Diverty * Woodbury, N. J.; Jefferson Medical College of Philadelphia, 1887; past president of the state board of medical examiners and the Gloucester County Medical Society; for many years member of the board of health, serving as president; medical inspector of the public schools; on the staff of Underwood Hospital; died Nov. 13, 1947, aged 83, of chronic myocarditis and arteriosclerosis.

Joseph F. Dusch, Louisville, Ky.; Hospital College of Medicine, Louisville, Ky., 1903; member of the American Medical Association; also a graduate in pharmacy; for many years city physician; affiliated with SS. Mary and Elizabeth Hospital, St. Anthony's Hospital, Methodist Deaconess Hospital, Norton Memorial Infirmary, Kentucky Baptist Hospital, Jewish Hospital and St. Joseph Infirmary, where he died Nov. 14, 1947, aged 75, of coronary occlusion.

Thomas Noah Dyson, San Antonio, Texas; Baylor University College of Medicine, Dallas, 1911; member of the American Medical Association; died Nov. 12, 1947, aged 62, of coronary thrombosis and diabetes mellitus.

Bernard Heath Early * Esmont, Va.; University College of Medicine, Richmond, 1898; died in New Orleans Nov. 9, 1947, aged 70, of cerebrovascular accident and arteriosclerotic heart disease.

Martin John Echeverria * New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1889; member of the American Urological Association; affiliated with the New York Dispensary; died in St. Vincent's Hospital Nov. 5, 1947, aged 83, of coronary occlusion and hypertension.

James Edward Erwin, Lewisburg, W. Va.; Louisville (Ky.) Medical College, 1878; died in the Greenbrier Valley Hospital recently, aged 95, of senility.

Walter Leonard Ezell, Boiling Springs, S. C.; University of the South Medical Department, Sewanee, Tenn., 1903; for many years county highway commissioner and member of the local board of education; died in Mary Black Memorial Hospital, Spartanburg, Nov. 28, 1947, aged 67, of coronary sclerosis.

Dewey Foster, Westmoreland, Tenn.; Vanderbilt University School of Medicine, Nashville, 1925; member of the American Medical Association; died Nov. 11, 1947, aged 48, of myocardial failure.

George Alfred Victor Goetz * Cleveland; Ludwig-Maximilians-Universität Medizinische Fakultät, München, Bavaria, Germany, 1919; on the staff of the Grace Hospital; died recently, aged 55.

Andrew Joseph Lorne Guay, Vancouver, Wash.; University of Toronto Faculty of Medicine, Toronto, Canada, 1926; served during World War II; affiliated with the Veterans Administration Hospital; died suddenly recently, aged 43, of coronary thrombosis.

Pauline Handelman-Kalashnikoff * Far Rockaway, N. Y.; Kiev Medical Institute, Kiev, Russia, 1922; specialist certified by the American Board of Pathology; affiliated with the St. Joseph Hospital and the Hospital for Joint Diseases; died recently, aged 54, of coronary thrombosis and hypertension.

John Edmond Hart, Columbia, Miss.; New Orleans University Medical College, 1900; died recently, aged 77, of coronary thrombosis.

Augustus William Hengerer, Buffalo; born in Buffalo July 14, 1875; University of Buffalo School of Medicine, 1902; fellow of the American College of Surgeons; member of the American Medical Association and the Buffalo Academy of Medicine; past president of the Buffalo Surgical Society; affiliated with the Millard Fillmore and Deaconess hospitals; died Nov. 10, 1947, aged 72, of cerebral hemorrhage.

Albert Henry Horn * Steelville, Mo.; Barnes Medical College, St. Louis, 1903; past president of the Phelps-Crawford Counties Medical Society; formerly deputy health commissioner for Crawford County; died Nov. 10, 1947, aged 74, of heart disease.

Max Huhner * New York; Columbia University College of Physicians and Surgeons, New York, 1893; specialist certified by the American Board of Urology; member of the American Urological Association; formerly on the staff of Bellevue Hospital and chief of the clinic in the genitourinary department at Mount Sinai Hospital; author of many books; devised test for sterility, known as the Huhner test; died Nov. 8, 1947, aged 74, of heart disease.

James Cecil Keeley, El Paso, Texas; Eclectic Medical College of Indiana, Indianapolis, 1904; died recently, aged 77, of hypertension.

William B. Kitchen * Glasgow, Mo.; St. Louis University School of Medicine, 1907; chairman of the board of directors of the Glasgow Savings Bank; died in the Trinity Lutheran Hospital, Kansas City, Nov. 10, 1947, aged 66, of infectious hepatitis.

Ferdinand Richard Krembs * Stevens Point, Wis.; University of Illinois College of Medicine, Chicago, 1924; interned at St. Joseph's Hospital in Chicago; past president and secretary of the Portage County Medical Society; served as city health officer; first lieutenant, medical reserve corps, U. S. Army, not on active duty; affiliated with St. Michael's Hospital; died Nov. 6, 1947, aged 49, of heart disease.

Clarence Andrew Kretschmar * Detroit; University of Michigan Medical School, Ann Arbor, 1920; owner of the Kretschmar Diagnostic Clinic and Hospital, where he died recently, aged 51, of acute coronary thrombosis.

John Henry Luke * Kansas City, Kan.; University of Kansas School of Medicine, Kansas City, 1928; past president of the Wyandotte County Medical Society; member of the Central Association of Obstetricians and Gynecologists, Kansas City Obstetrical Society and the Southwest Clinical Society; served during World Wars I and II; affiliated with the Providence Hospital, St. Margaret's Hospital and the Bethany Hospital, where he died Nov. 10, 1947, aged 47, of pneumonia.

James Carlisle McLeod * Florence, S. C.; Cornell University Medical College, New York, 1922; past president of the South Carolina Medical Association; served during World War II; in 1946 was a candidate for governor of South Carolina; surgeon in chief of the McLeod Infirmary; died Dec. 9, 1947, aged 50, of coronary thrombosis.

Mary Mabon, Oil City, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1936; member of the American Medical Association; interned at Passavant Hospital in Pittsburgh; affiliated with Polk State Hospital, where she died Nov. 14, 1947, aged 51, of carcinoma.

Edward Lowry Martindale, Clinton, Iowa; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1894; veteran of the Spanish-American War, Mexican border war and World War I; president of the Lyons and Fulton Bridge Company; affiliated with the Jane Lamb Memorial Hospital, where he died Nov. 16, 1947, aged 78, of heart disease.

Gertrude Kirkpatrick Meck, Cleveland; Cleveland Homeopathic Medical College, 1910; died Nov. 9, 1947, aged 79.

Evelyn Dolores Mosteller Miller, Des Moines; Drake University Medical Department, Des Moines, 1896; died recently, aged 73, of carcinoma of the pancreas.

M. Jeanette Scott Miller, Allentown, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1888; died Nov. 1, 1947, aged 80, of injuries received when she fell down stairs.

George U. Grant Mills, Hackettstown, N. J.; Medico-Chirurgical College of Philadelphia, 1905; member of the board of health; affiliated with the Warren Hospital in Phillipsburg; died in the Memorial Hospital, Morristown, Nov. 17, 1947, aged 77, of uremia.

Carney Wilson Mimms, Ocala, Fla.; University of Louisville (Ky.) Medical Department, 1914; member of the American Medical Association; past president of the Marion County Medical Society; affiliated with the Munroe Memorial Hospital, where he died Nov. 5, 1947, aged 57, of coronary occlusion.

Charles James Mooney, New Rochelle, N. Y.; University of the City of New York Medical Department, New York, 1889; died in the Post-Graduate Hospital, New York, Nov. 6, 1947, aged 84, of gastrointestinal hemorrhage.

Paul Peniston, Newnan, Ga.; Atlanta Medical College, 1889; died Nov. 13, 1947, aged 80, of acute bronchial pneumonia.

Reinhard Rembe, Chicago; St. Louis Medical College, 1887; Friedrich Wilhelms Universität Medizinische Fakultät, Berlin, 1892; at one time on the faculty of the University of the Philippines College of Medicine and Surgery and on the staff of the Philippine Islands General Hospital in Manila; died in Alexian Brothers Hospital Nov. 11, 1947, aged 79.

Nathan Oyler Reynolds, Los Angeles; John A. Creighton Medical College, Omaha, 1912; member of the American Medical Association; found dead Nov. 2, 1947, aged 58.

Bruce Richardson, Beaumont, Texas; Detroit College of Medicine, 1900; affiliated with Hotel Dieu and St. Therese Hospital; died Nov. 1, 1947, aged 71, of coronary occlusion.

Samuel William Rock @ New York; University and Bellevue Hospital Medical College, New York, 1915; fellow of the American College of Surgeons; affiliated with Beth Israel Hospital, where he died recently, aged 53.

George Clifton Rodebaugh, Pasadena, Calif.; Starling-Ohio Medical College, Columbus, 1912; member of the Ohio State Medical Association and the American Medical Association; served during World War I; died in St. Luke's Hospital Nov. 6, 1947, aged 61, of coronary thrombosis.

Floyd Dwight Rodgers @ Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1910; served in France during World War I; specialist certified by the American Board of Radiology, Inc.; member of the Radiological Society of North America and the American College of Radiology; affiliated with the Columbia and Providence hospitals; died in State Park, Nov. 7, 1947, aged 59, of tuberculosis.

Herriot C. Rooth @ Buffalo; University of Buffalo School of Medicine, 1894; formerly on the faculty of his alma mater; fellow of the American College of Surgeons; served on the staffs of the Lafayette General Hospital, of which he had been a founder, the Buffalo General Hospital and the Millard Fillmore Hospital, where he died Nov. 3, 1947, aged 80, of heart disease.

Noemi Rosenzweig, New York; Medizinische Fakultät der Universität, Wien, Austria, 1924; served on the staff of the Lincoln Hospital; died recently, aged 48.

Frank Saylor Rossiter @ Swissvale, Pa.; University of Pittsburgh School of Medicine, 1908; for many years industrial surgeon at the Westinghouse Electric Corporation and Carnegie-Illinois Steel Corporation; affiliated with St. Francis and Western Pennsylvania hospitals in Pittsburgh and the Brad-dock (Pa.) General Hospital, where he died recently, aged 61, of coronary thrombosis.

Frank Everett Sawyer @ Oakland, Calif.; Cooper Medical College, San Francisco, 1900; died Nov. 16, 1947, aged 73, of carcinoma of the stomach.

Harold William Schoon @ Sibley, Iowa; State University of Iowa College of Medicine, Iowa City, 1931; died near McCook, Minn., Nov. 9, 1947, aged 42.

D. W. Shirkey, Montgomery, W. Va.; College of Physicians and Surgeons, Baltimore, 1891; member of the American Medical Association; honorary member of the West Virginia State Medical Association and the Fayette County Medical Society; died Nov. 19, 1947, aged 78, of bronchopneumonia and hypertension.

Benjamin Ernest Sibley @ Boston; Harvard Medical School, Boston, 1905; for many years chief medical officer of the Boston Elevated and Metropolitan Transit Authority and a member of the medical staffs of Liberty Mutual Insurance Company and Massachusetts Institute of Technology; affiliated with the Brooks Hospital in Brookline, where he died Nov. 19, 1947, aged 73, of complications following a gallbladder operation.

Emery Frank Small, Vincennes, Ind.; Medical College of Indiana, Indianapolis, 1904; member of the American Medical Association; served during World War I; during World War II served as examining physician for Knox County draft board 1; formerly county coroner and member of the county and city council; affiliated with Good Samaritan Hospital; member of the board of managers of Hillcrest Tuberculosis Hospital; trustee of Vincennes University; died Nov. 21, 1947, aged 73, of angina pectoris.

Jay Dickey Smith @ Akron, Ohio; Starling Medical College, Columbus, 1906; fellow of the American College of Surgeons; affiliated with the Children's Hospital, City Hospital, St. Thomas Hospital and the People's Hospital, where he died Nov. 17, 1947, aged 68, of hypertension, arteriosclerotic heart disease and pulmonary embolism.

James Charles Sommer @ Grove City, Ohio; Starling-Ohio Medical College, Columbus, 1913; president of the county board of education; served as vice president of the First National Bank; died in Mount Carmel Hospital Nov. 21, 1947, aged 63, of cerebral hemorrhage.

Charles E. Stephens, Baldwin City, Kan.; University Medical College of Kansas City, 1892; died recently, aged 84, of cerebral hemorrhage and hypertension.

Elmer Harmon Thompson @ Burbank, Calif.; Rush Medical College, Chicago, 1903; fellow of the American College of Surgeons; formerly clinical professor of gynecology at the College of Medical Evangelists in Los Angeles; affiliated with the Burbank Hospital; died Nov. 4, 1947, aged 69, of suppurative nephritis and carcinoma.

Gilbert Frank Thompson, State Soldiers Home, Ohio; University of Cincinnati College of Medicine, 1913; affiliated with the Ohio Soldiers' and Sailors' Home Hospital; died in Lakewood (Ohio) Hospital Nov. 6, 1947, aged 71, of cerebral hemorrhage and hypertension.

Moses D. Tibbetts, Highland, Ill.; Missouri Medical College, St. Louis, 1881; director of the First National Bank; died Nov. 17, 1947, aged 90, of myocarditis.

Ervin Torok @ New York; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása, Budapest, Hungary, 1899; professor of ophthalmology at the New York Polyclinic Medical School and Hospital; member of the American Ophthalmological Society; served on the staffs of Beth Israel, Beekman and Downtown hospitals in New York, Tarrytown, (N. Y.) Hospital, Grasslands Hospital in Valhalla and the Ossining (N. Y.) Hospital; co-author of "Surgery of the Eye"; died Nov. 4, 1947, aged 70, of carcinoma of the lung.

Samuel Henderson Wallace, Birmingham, Ala.; Birmingham Medical College, 1911; member of the American Medical Association; served during World War I; died Nov. 20, 1947, aged 67, of melanoma with general metastases.

Edgar Poe Walters, Pikeville, Ky.; Hospital College of Medicine, Louisville, 1907; died recently, aged 67, of coronary occlusion.

Edward Dane Warren, Holyoke, Mass.; Baltimore Medical College, 1902; served as city physician; affiliated with the Providence Hospital and the Holyoke Hospital, where he died Nov. 19, 1947, aged 70, of cerebral hemorrhage.

Frederick William Whiting, Portland, Ore.; Trinity Medical College, Toronto, Canada, 1895; died recently, aged 78, of cerebral hemorrhage.

Rollin Curtis Winslow, Battle Creek, Mich.; Northwestern University Medical School, Chicago, 1902; member of the American Medical Association; past president of the Calhoun County Medical Society; served during World War I; affiliated with the Leila Post and Community hospitals; died suddenly Nov. 21, 1947, aged 74, of coronary occlusion and diabetes mellitus.

James Louis Wood, Milan, Tenn.; University of West Tennessee College of Medicine and Surgery, Memphis, 1919; died recently, aged 74, of myocarditis.

Abraham James Zook, Burbank, Calif.; Rush Medical College, Chicago, 1897; member of the American Medical Association; affiliated with Glendale (Calif.) Sanitarium and Hospital and Burbank Hospital; died recently, aged 75, of coronary thrombosis.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 15, 1948.

The Scheme for London Under the National Health Service

Though no agreement as to the National Health Service between the government and representatives of the medical profession has been reached, administrative measures are advanced. London, with its huge population living in twenty-eight boroughs in addition to the city, offers a special problem. A report to the health committee of the London County Council covers some of the new duties imposed on that body. They include the care of mothers and young children, midwifery, health visiting, home nursing, prevention of illness, care and after-care, mental health and domestic help. The cost of the service for a full year is estimated at \$8,000,000, of which half will be met by a grant from the government, the rest by a rate of 2 cents per dollar of rateable value of property. The nine education divisions of London have been adopted as health divisions, which will be further divided into one hundred and sixty-five areas, each based on a population of 20,000. They will be controlled by committees, one third of which will be elected representatives of the London County Council and two thirds of men and women with more intimate local knowledge. Each division will be in charge of a medical officer of high standing, who will be responsible under the county medical officer for coordinating the personal health services.

The plan aims at insuring the fullest cooperation between the personal health services provided by the council and the hospital, specialized services and those of the general practitioner. It is desired that the voluntary organizations now working shall continue, at any rate for a reasonable time, with the council having a small representation on their governing bodies and power to inspect their work. Health visiting will be an important part of the work, and home nursing will be encouraged. A greater degree of specialization will be encouraged in maternity and child welfare work. A recruiting campaign will be started to increase by 50 per cent the number of domestic aides in the first year.

Compulsory Treatment of Venereal Disease is Ended

In this country, unlike either fascist or communist states, there is great respect for the rights of the individual. But these, like many other things, had to be sacrificed for the more effectual waging of the war. Thus venereal diseases increased, became a greater threat to our manpower and had to be checked in every possible way. When patients came to the clinics for treatment there was at first no means of dealing with contacts who infected them. Under the Defence Regulations the treatment of venereal disease was made compulsory in those who were sources of infection. They belonged to the relatively small class unresponsive to educational and persuasive measures. At the close of 1947 the regulations ceased to operate. But they proved so useful in giving the health authorities increased opportunity for tracing contacts of patients who sought treatment at venereal disease clinics and in persuading considerable numbers voluntarily to undertake treatment that the Minister of Health has directed these authorities to do all that they can to continue this persuasion, notwithstanding the expiration of the regulation.

The procedure referred to need be considered only as an alternative to the generally adopted practice of requesting a patient under treatment to induce a contact to attend the clinic. General use should be made of a practice already operating in some clinics, that of giving the patient a slip or card bearing the patient's clinic number and the code designation of his disease,

and asking the patient to pass it on to the contact with the request, that it be presented if he later attends the clinic. Thus the case of the contact can be associated with that of the patient concerned. If a patient attending a clinic voluntarily gives the suspected source of infection, he or she should be asked for consent to the use of the information for the purpose of approaching the contact. It should be explained that the patient's identity will not be disclosed without her or his consent to this course. Information as to the contact is transmitted to a local health officer, who can then arrange for the contact to be approached by a health visitor or social worker. The contact should not be informed of the name of the patient who named her or him, unless the patient has consented to this. The health officer or clinic officer is not open to action for slander in the absence of malice. Thus the wartime compulsory treatment of venereal diseases has ceased, the health authorities have to deal with contacts only by persuasion and the boasted liberty of the Briton, even including the right to spread venereal disease, is recognized.

PARIS

(From Our Own Correspondent)

Jan. 5, 1948.

First International Congress for Clinical Biology

The Congress for Clinical Biology took place in Paris Nov. 20 to 23, 1947 on the initiative of the French Society for clinical biology, which was created in 1943 at the height of the war, without German authorization, by the National Syndicate of Laboratories for medical analysis. The minister of public health presided at the opening meeting at the Pasteur Institute lecture hall, at which were present Professors Polonowsky, Justin-Bezançon and Fleury, president and vice president of the congress. The mornings were allotted to experimental demonstrations in the hospitals and laboratories of Paris, the afternoons to reports and communications, on such subjects as cytologic diagnosis and dermatologic tests—Professor Tzanck (Saint Louis Hospital) spoke on a new method of investigation by means of aspiration with a syringe and the immediate examination of cytologic preparations; Professor Alajouanine, Drs. Thurel and Durupt, who explained the technic of gaseous encephalography by the lumbar route have obtained interesting results in cranial traumatism, infantile encephalopathies, multiple sclerosis and syphilis of the nervous system. Dr. Hermite (Sheffield) set forth the technic for biopsy with the syringe and showed photographs of paraffin sections obtained on deep neoplasms. Changes in the cerebrospinal fluid following streptomycin therapy were discussed by Tullio de Sanctis Monaldi (Rome), in 35 children with tuberculous meningitis. Mr. Desbordes, general inspector of laboratories for the ministry of public health, reported on the role of official laboratories, within the scope of the social security laws, for the detection of syphilis. The scientists visited the Percy Transfusion Center, one of the most beautiful in Europe. During the congress an International Society for Clinical Biology was created. The official journal of the French Society for Clinical Biology, *Les Annales de Biologie Clinique*, is under the management of Professor Paget.

International Congress of Psychiatry

A preparatory meeting of the first International Congress of Psychiatry took place at the Paris Faculty of Medicine under the presidency of Professor Jean Delay and the honorary presidency of Professor Lhermitte; in attendance were delegations from twenty-two nations. The management and preparation for the international congress to be held in Paris in 1950 were entrusted to a French committee consisting of: honorary presidents Pierre Janet and Jean Lhermitte; president Jean Delay; vice presidents Henri Baruk, Paul Delmas Marsalet, Georges

Heuyer and Louis Marchand; general secretary Henri Ey, and treasurer Paul Sivadon. Beside numerous committee meetings devoted to particular subjects, six meetings will be held at which various reports, each appertaining to one of the sections, will be discussed: general psychopathology (Professor E. Minkowsky, France); psychiatry clinics (Paul Guiraud); anatomico-physiopathology (Delmas Marsalet); Biologic therapeutics (Jean Dechaume); psychotherapy, psychoanalysis and psychosomatic medicine (A. Hesnard); social psychiatry (Jean Lauzier), and infantile psychiatry (Georges Heuyer).

Treatment of Acute Leukemia by Blood Transfusion

Bessis and J. Bernard, of the research laboratory of the Center for Blood Transfusion, proposed the treatment of acute leukemia by blood transfusion at one of the last meetings of the National Academy of Medicine, and Professor Laubry presented a report on spectacular results obtained in a child 6½ years of age. On admission to the hospital the child was precomatose with fever (104.2 F.) pallor, gingival lesions, hemorrhagia, hepatomegaly, splenomegaly and enlargement of the glands. Examination of the blood revealed 1,370,000 erythrocytes and 86,400 leukocytes, with 98 per cent lymphoblasts; in the medulla, 99 per cent lymphoblasts. The first transfusion of 800 Gm. of blood was given when death appeared imminent. On the following day the blood count was improved. A second transfusion was done four days later, and a third after an interval of seventeen days. The results were astonishing. The clinical symptoms disappeared and the blood count became 4,600,000 red corpuscles and 4,000 leukocytes. All transfusions were made with fresh blood, from arm to arm, without adjunction of any anticoagulant. The improvement persists, though it is too early to speak of a definite recovery. Moved by this splendid success, the authors contemplate trying this treatment in other cases of leukemia and against other diseases.

Amendments to French Laws on Autopsies

By a decree dated Oct. 20, 1947, the official regulations on autopsies were modified as follows: in hospitals and institutions on a list drawn up by the Ministry for Public Health, when the chief of the service deems that it is required in the interest of scientific or therapeutic knowledge, autopsies can be performed even without authorization of the family. The importance of this reform is enormous, especially in the field of ophthalmology, as emphasized at one of the last meetings of the National Academy of Medicine by Dr. Cavaillon, general secretary to the Ministry for Public Health, Dr. Leroux and Mrs. Sautter-Duval. Up to this date keratoplasty could only be resorted to in exceptional circumstances, although it appears from statistics that about 5,000 blind persons would be aided by the graft treatment; it is estimated that, at the Quinze-Vingts Hospital, 76 of 228 blind persons could have their vision restored.

Death of Professor Clovis Vincent

Professor Clovis Vincent, one of the most prominent surgeons of the world, has just died at the age of 69. He was a disciple of Babinski. In 1933 he became a doctor in the Paris Hospitals. During World War I he studied the phenomena of shock on the battlefields. In 1923 he published a paper on the false Bordet-Wassermann reactions and recommended caution in the diagnosis of syphilis in diseases of the nervous system. In 1928 he met Cushing in Boston and after his return to France decided to perform operations himself. One year later physician had become a surgeon after an enormous effort. This led to the presentation, before the Medical Society of the Paris Hospitals, of 8 patients with cerebral tumors cured by an operation. In 1930, with two collaborators, he presented the first clinical observation of hernia of the temporal lobe. In 1933 he obtained the official creation of a service of neurosurgery at "La

Pitié" hospital, which became one of the first neurosurgical clinics of the world. In 1936 he set forth, for the first time, his treatment in two phases of abscesses of the brain, whereby numerous patients, hitherto considered as lost, were cured. In 1939 he was appointed professor of neurosurgical clinics. "Neurosurgery is one of the most beautiful examples of what human nature is capable of in order to conquer nature" was the concluding sentence in his opening lecture in the professorship of neurosurgery, and nothing demonstrates better this affirmation than his own life. During the occupation he was one of the first "résistant" at the side of Professors Pasteur Vallery-Radot and Debre.

TURKEY

(From Our Regular Correspondent)

ANKARA, Dec. 31, 1947.

Cancer Research Institute and Cancer Control Society

The first Cancer Institute was established in 1927 by Professor Hamdi Suad of Istanbul University. Dr. Hamdi Suad was well known in Turkey and abroad for his experiments in cancer pathology. His intensive investigations into human and animal cancer enabled him to add a cancer department to the museum of the university's medical school. Because of the reorganization of Istanbul University in 1933 Professor Hamdi Suad was retired, but he continued his work at the Istanbul Charity Hospital until his death four years later. In his place Professor Oberndorfer of Germany was appointed and continued the work at the Cancer Institute until he died in 1942.

The fact that three quarters of the population are living in 40,000 villages makes it difficult to secure accurate statistics, but there is ample evidence through the steadily increasing admission of cancer patients to town and city hospitals that cancer in Turkey is on the increase, especially cancer of the lung and prostate.

In February 1947 a Cancer Institute in Ankara and a Benevolent Society for the investigation and control of cancer were established. The society is to have branches in other cities and towns. It is expected that this will throw more light on the cancer situation in Turkey. From among the fifty-seven members of the institute, professors, doctors and other scientists, there has been appointed an administrative committee of five, of which Professor Irfan Titiz is the president and Dr. Perihan Cambel, a woman pathologist, general secretary. The institute is to open laboratories and control centers, engage in research work and further the prevention and early diagnosis of cancer, enlighten the public on the subject, remove the fear and anxiety and aid those afflicted, follow up cancer patients, publish pamphlets, posters, books and reports, give radio talks concerning cancer, take steps to inform the medical and allied professions of the progress in cancer research and other matters pertaining to cancerology, and get in touch with foreign cancer institutes and cancer control societies. On payment of a yearly contribution of at least 10 Turkish pounds friends of the society are accepted as members. These contributions are to go toward a fund from which cancer-afflicted persons will receive aid, the number of hospital beds for cancer patients will be augmented and ultimately a cancer hospital will be established.

Accurate cancer death statistics are not yet available. However, it has been ascertained that the number of cancer patients admitted to hospitals during the period from 1935 to 1944 was 40,029, of which 18,968 were men and 21,061 women. According to age they ranged as follows: 3,119 aged 10 to 35 years; 6,199 aged 35 to 44; 13,012 aged 45 to 54; 11,420 aged 55 to 64, and 6,279 aged 65 and above.

According to religious belief the number was as follows: Mohammedans 35,108; Christians 3,720 and Jews 1,201. According to race, the whites numbered 39,982 and the colored 47.

MADRID

(From Our Regular Correspondent)

Dec. 31, 1947.

Fourth National Municipal Health Congress

There was an extraordinarily large attendance of health officers from all over Spain at the Municipal Health Congress in Madrid, Nov. 3-9, 1947. The minister of the interior presided at the opening and the head of the state at the closing made a long speech, which was received with obvious marks of public satisfaction. In his inaugural speech the Minister of the Interior reviewed the work done since the end of the civil war, which has indeed been great and deserves applause from the sanitary point of view.

The first report, read by Dr. Blas Sierra and Señor A. Salamanca, dealt with "Rural Housing; the Doctor's House; Health Centers." Of many communications heard in the course of the debate, one that stood out was by Dr. Vicente Cebrian, who proposed certain rules and regulations concerning this problem. The second report, which dealt with "Tuberculosis in Country Places," was presented by Drs. Laureano Lago Ferrero and Julio Barron and was discussed at length under the leadership of Dr. A. Crespo Álvarez, president of the Madrid Medical Association. "Diarrhea in Childhood: Clinical Instruction, Treatment and Prophylaxis" was the title of the third report, entrusted to Drs. C. M. Álvarez Martin and J. Santamaria Pulido. This too was the subject of a lively debate.

A meeting was held at the Madrid Faculty of Medicine, at which problems affecting the practice of visiting public health officers were threshed out and some effective resolutions were passed. Furthermore, a series of masterly lectures was given by eminent medical men, viz:

Professor Jiménez Díaz, "The Emergency Medicines of the General Practitioner"; Professor Martín Lago, "Acute Vascular Accidents"; Professor G. Marañón, "Present State of the Pathology of Growth"; Professor P. Lain Entralgo, "The Country Doctor's Reading"; Professor Clavero del Campo, director of the National Health School, "Treatment of Malaria"; Dr. J. M. López Ibor, "The Soul in the Diseases of the Body: the Pathology of Vitality," and Dr. A. Crespo Álvarez, "The Way in Which Pulmonary Tuberculosis Begins in Adults." Finally, the president of the General Council of Medical Associations, Dr. C. González Bueno, spoke on the medical and social problems of country doctors, commenting on the benefits accruing from recent legislation and that now planned, most of which is due to the persevering work of the council over which he presides.

More than 3,000 members took part in this congress, a number never before reached at any meeting in Spain. The beneficial achievements of the event were expressed in effective conclusions relating to health. These, however, have not yet been published.

National Institute of Industrial Medicine and National School of Industrial Medicine

By decree of July 7, 1944, the Ministry of Labor created the National Institute of Industrial Medicine, Hygiene and Safety. Its main fields of action are research and study on problems of industrial medicine and safety, advising the ministry and other official or private bodies, as well as the labor magistrates and law courts, on medical problems related to work. It will report on the processes of, and means of preventing, industrial accidents and diseases and will train special personnel for the care of victims of such accidents and diseases. The institute also plans to carry out physiologic studies on the problems of industrial hygiene and their maximum physiologic adaptation to the various trades, also to disseminate in every possible way all such knowledge and advice as may be useful in this connection. A series of publications are reminiscent of the rules and warnings published by similar bodies in North America.

The institute also hopes to arrange exchanges both of publications and of technical personnel with similar institutions abroad and to organize congresses and other events to deal with questions of industrial medicine, hygiene and safety. An effort in this direction has already been made at a congress recently held at Valencia. The institute will advise the Ministry of Labor on the problems inherent in the health insurance plan now functioning in Spain but with a somewhat imperfect organization.

The Institute of Industrial Medicine, Hygiene and Safety has new premises in University City (Madrid). There are five floors housing the various departments, such as consulting rooms, gymnasium, swimming pool, Industrial Safety Museum, anatomic museum, publicity office with cinema and photography plant, technical department offices, assembly hall, offices of the directorate and subdirectorate, legal adviser's department, library and administrative offices. On the second and third floors are sanatoriums with seventy-five and sixty-five beds, respectively, as well as apartments for Sisters of Charity, dining-rooms and chapel. On the fourth floor are all the research and clinical laboratories and on the fifth, terraces and accommodation for animals kept for experiments. In addition there is an annex communicating directly with the ground and first floors, in which are the operating theaters and the private patients' rooms.

To the institute is attached the National School of Industrial Medicine, whose functions will be to teach and do research. The teaching will comprise: the training of specialists in traumatology and orthopedics; the training of specialists in social insurance and social medicine campaigners; short courses in various branches of industrial medicine; prevention and safety at work, and courses and lectures in plants for the various classes of workers.

The school is to be in close contact, through its director, with the Faculties of Medicine, the Higher Research Council, the National School of Health, the National Health Insurance Fund and the School of Legal Medicine.

It is also one of the school's main ideas to encourage scientific relations with similar organizations abroad, by means of exchanges of personnel and publications and the founding of a number of scholarships.

At present the problem is being studied of developing the nutrition department on a broad basis for suitable research. The campaign against rheumatism in the working classes is to be conducted by the institute. The teaching of traumatology and orthopedics which has already begun, in the future is to be obligatory for the practice of this specialty in connection with social insurance; this teaching will form part of the curriculum of the National School of Industrial Medicine, and in this aspect it will be attached to the Spanish University as a Postgraduate School.

Among the studies already in full development may be mentioned those that aimed to prevent injury and disease in the lead and glass industries.

The director of the institute is Professor A. Lafuente Chaos, of the Valencia Faculty of Medicine, a pupil of the late Professor L. Olivares. The medical department is under the direction of Professor J. L. Rodríguez Candela, now attached to the Higher Council for Scientific Research and one of the most promising of the younger members. The physiology department is to be entrusted to Dr. F. Grande Cobian. This institute and teaching center are destined to do excellent work; both should achieve universal fame. Furthermore, a strictly scientific and nonpolitical criterion is to be applied in the selection of personnel, and for the appointment of heads of departments the old system of competitive examination is to be discarded; this is a matter for congratulation, since this system has proved nefarious in many instances, particularly in the provision of university chairs.

Correspondence

CONTRACEPTION MASKING STERILITY AND INFERTILITY

To the Editor:—In the January 3 issue of *THE JOURNAL*, page 56, Dr. S. I. Movitt of Los Angeles calls attention to two statements taken out of my paper on "Contraception Masking Sterility and Infertility" (*THE JOURNAL*, Dec. 28, 1946, p. 1047), which apparently puzzle him to the extent of incredulity.

Workers in the field of sterility are, of course, familiar with the facts as stated in my paper. To others less familiar with the results obtained by the Huhner test, there might seem to be a contradiction as implied by Dr. Movitt. The first statement to which the doctor refers is, "in an appreciable number of cases the Huhner test showed 10 spermatozoa or less per high power field despite which pregnancy has taken place." This statement is confronted with the observation that the normal range of sperm is "from 60 million to 120 million" per cubic centimeter. There is no disagreement as to this well established observation. The number of spermatozoa found by the Huhner test are as follows: in 83 women who became pregnant of the 1,000 who were studied in relation to contraception, there were 60 with data relevant to the Huhner test. Twenty per cent of these (12 cases) showed less than 10 spermatozoa per high power field in the vaginal secretion; 68.3 per cent (41 cases) had 10 or less per high power field in the cervical secretion. These are actual findings, incredible as they may appear to Dr. Movitt. Compared to these 83 women, a similar number of women who did not become pregnant showed only one and one-half to two times greater paucity of spermatozoa.

The second statement from my paper is quoted accurately by Dr. Movitt, to wit: "Absence of spermatozoa by the Huhner test, even if found on several occasions, is not always conclusive evidence of male sterility." But the quotation was amputated from the sentence which, in the original paper, immediately follows: "Normal spermatozoa may be demonstrable in the specimen of semen itself." As a matter of interest in this connection, in 5 of the 60 women who became pregnant no spermatozoa were recovered from the cervical secretion. Undoubtedly insemination at other times, not controlled by the Huhner test, must have been more adequate and successful in effecting conception. The concentration of spermatozoa in the ejaculate and their scattering within the vagina, in addition to reflux from the introitus and incomplete insemination in the first place plus diminished production encountered in sterile males, are factors which must be taken into account in comparing the numbers of sperm as found by the Huhner test and in the specimen of semen contained in the jar or condom.

I. C. RUBIN, M.D., New York.

NO RAGWEEDS IN THE BRITISH ISLES

To the Editor:—Your book notice on "Diseases of Children" edited by Paterson, appearing in *THE JOURNAL* of Dec. 13, 1947, page 1039, specifies that the authors discuss desensitization only for early hayfever and states that "nothing is said about hayfever caused by giant and dwarf ragweeds or about desensitization against this type."

Since the volume was written by British physicians and presumably for British physicians it is not surprising that this aspect of hayfever is not discussed. The ragweeds generally do not exist in the British Isles, and in fact are of no practical consequence throughout Europe. It is for this reason that the only significant hayfever in Britain is that due to the pollens of grasses, and the authors should not be censured for failing to consider the other types.

PHILIP M. GOTTLIEB, M.D., Philadelphia.

A STREPTOMYCIN HAZARD TO PUBLIC HEALTH

To the Editor:—Patients with tuberculosis are being treated with streptomycin in homes, offices and institutions throughout the country. Certain good effects suggest that this agent will find a place in the scheme of therapy. It is probably being used far oftener than truly indicated. The drug fails in some cases and leaves an infectious condition more hazardous to future contacts than existed before its use. This possible hazard is a result of the resistance which tubercle bacilli often develop to streptomycin. Perhaps two thirds of the human subjects with pulmonary tuberculosis have a resistant strain in their lesions and bronchial secretions after the drug has been used in full doses for a few months, or even a few weeks. The bacilli are resistant thereafter to further doses of any size, both in culture or animals, and even after repeated transfers.

The clinical implications can easily be seen: a patient whose disease does not become arrested and noninfectious will continue to harbor the resistant organisms, continue to spread them in his sputum and cough droplets; he may infect his family, his attendants or even casual contacts with the resistant bacilli, and they will then have an infection or disease which will not respond to streptomycin. (This is not vague theory; instances of such infection have already been diagnosed.) The same type of hazard, though less in degree, is present in other infectious discharges from the urinary, intestinal or sinus tracts.

It is not too soon to be concerned with this problem. Streptomycin has been used experimentally on human disease for about two and one half years. It has been marketed through commercial channels and sold on prescription for more than one year. The limited amount available, the high (though decreasing) cost and the imperfectly known indications for its use have restricted the number of patients to whom it has been given. Nevertheless, it has probably been administered to several thousand persons in hospitals, sanatoriums and private practice. It is not too early to take an attitude which may protect the public health.

There is no single measure which would solve the entire problem. There are a number of approaches which might be effective in part. The U. S. Public Health Service, the National Tuberculosis Association, the American Trudeau Society and the Veterans Administration have been correlating in the conduct of further research for use of the drug; they could surely arrange and adopt a plan which would "label" patients with a resistant strain of bacilli and safeguard their contacts. The various medical journals and medical societies could call the problem to the attention of readers and members. Physicians in private practice and members of sanatorium staffs could follow the work being done and use the restrictions which are recommended. Patients might be asked to guarantee a certain line of conduct before being allowed to take streptomycin. The effectiveness and value of precautions against infectious disease could be further investigated by hospital societies, public health groups and research groups. States with rules for compulsory segregation of infectious patients could add amendments which would cover the streptomycin cases. The Food and Drug Administration might be concerned with the method of prescribing such a potentially dangerous preparation. Several of these approaches are inherently weak, including those which depend on voluntary restrictions or on rulings which are already poorly enforced. Some modification of streptomycin, or some other antibiotic, may become available which will eliminate the hazard. The pharmaceutical laboratories have an added reason to find a more perfect drug. It is time for various organizations to take a quick, definite and vocal stand. The object of this letter is to draw attention to the problem and to get suitable action started. The idea has been approved by several colleagues who realize that the problem is acute, unsolved and larger than any one committee or society.

W. H. OATWAY JR., M.D.
Tucson, Ariz., and Barlow Sanatorium, Los Angeles.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARD OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Feb. 7, page 420.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II*. Various centers, June 21-23. Final date for filing application is May 22. *Part II*. Various centers, April 26-27. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral*. New York, April 12-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*. Group B. Various centers, Feb. 16. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written*. Oct. 18. Final date for filing application is June 1. Asst. Sec-Treas., Dr. W. A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNCOLOGY: *Oral*. All Groups. *Part II*. Washington, D. C., May 16-22. Final date for assignment is April 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral*. Baltimore, May 20. Chicago, Oct. 6. *Written*. Various centers, Jan. 1949. Final date for filing application is July 1, 1948. Sec., Dr. S. Judd Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF PATHOLOGY: Philadelphia, March 8-10. Final date for filing application is March 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis, Mo.

AMERICAN BOARD OF PEDIATRICS: *Oral*. Cleveland, April 23-25. Chicago, June 25-27. Seattle, Sept. 10. Atlantic City, Nov. 17-19. *Written*. March 12, July 30. Sec., Miss Lea Leonard, 718 Royal Union Bldg., Des Moines, Ia.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in April and November of each year in the home town of applicants. Sec., Dr. Robert H. Ivy, 1930 Chestnut St., Philadelphia.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral*. Washington, D. C., May 13-15, 1948. Final date for filing application is Feb. 15. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral*. Chicago, June 1948. Final date for filing application is March 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

Medical Motion Pictures

FILM REVIEW

The Development of the Gastro-Intestinal Tract. 16 mm., color, silent, 2,000 feet (two reels), showing time eighty minutes. Prepared by Joseph J. McDonald, M.D., Department of Surgery, Columbia University-Presbyterian Medical Center, New York. Procurable on purchase from: Columbia University Press, 1145 Amsterdam Ave., New York 27..

Reel I. *The Development of the Gastro-Intestinal Tract*.—The embryology of the gastrointestinal tract is shown by means of colored animated drawings beginning with the earliest stages when the primitive endoderm is first recognizable as a few cells on the deep surface of the embryonic cell mass of the free blastocyst. Its growth is traced through the period of implantation and placentation, showing in detail the early formation of the foregut, midgut and hindgut. After the age of six weeks has been reached the animated development is correlated with dissections of embryos photographed in color under magnification. Details are shown of the formation of the liver, bile ducts and pancreas, the rotation of the stomach, duodenum and intestines, the fusion of the mesenteries and the development of the omentum.

Reel II. *Anomalies*.—In this section of the film, a group of surgically important anomalies of the gastrointestinal tract have been collected. Preoperative and operative observations have been photographed and explained by means of animated diagrams as well as autopsy observations in some cases. Included in this group are examples of small bowel stenosis and atresia, duplication of the ileum, omphalocele; Meckel's diverticulum, volvulus, imperforate anus, rectovesical fistula and malrotation of the intestines.

With all its excellence, one or two things may be noted that should be avoided in future films; for example, subtitles should be complete sentences. In this film the author's eagerness to save one or two words leads to combinations like this: "amnion enclosed embryo" for "embryo enclosed in amnion" and "theory of duplication arising from" for "the theory that duplication results from." The pinching and plucking of delicate structures with forceps is especially bad when the subject is living but should not be habitual even in the dead subject. There is a great deal of this in the film, and it is especially painful to witness in the case of the extremely delicate omentum. A more careful handling of the omentum would have enabled the anatomist to demonstrate the fact that it is double and forms a bursa. Students who may some day become surgeons, and especially neurologists and ophthalmologists, should not witness such a manhandling of fragile structures.

This film is a valuable teaching aid for courses in embryology, and no instructor in developmental anatomy can afford to overlook it. It is gratifying to be able to report that the work is well done and, in many ways, definitive. The first parts would be appreciated most by freshman medical students. The concluding part would be preferred by practicing surgeons and pediatricians. Photography and animation are well done.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospital Insurance: Preexisting Cancer.—The plaintiff sued to recover the cost of hospital services rendered to the insured prior to her death. From a judgment for the plaintiff, the defendant appealed to the Court of Civil Appeals of Texas, San Antonio.

The policy sued on was issued to the deceased on Jan. 21, 1944, and it provided for the payment of hospital bills resulting from sicknesses which had their beginning not sooner than thirty days after the date of issue, i. e., not sooner than Feb. 20, 1944. The insured died from cancer on Dec. 20, 1945. The evidence showed that the insured had undergone the surgical removal of a cancerous breast in April 1943 but had been in apparent good health from that time until May 1945. The defendant insurance company contended that the insured was suffering from cancer prior to Feb. 20, 1944 and was therefore not entitled to a recovery under the terms of the policy.

The deceased's attending physician refused to state that the deceased had cancer in January of 1944. He did say that "she had the cell nests, which originated from the original cancer of the breast, but I don't think they were growing at that time, in 1944." He said that because he had seen her in May 1945 and had not even been able to detect them, and because she had died that same year with cancer all over her body, he did not believe that the "cell rests" could have spread that fast if they had been active at the date mentioned in 1944. According to the physician, the medical profession does not regard the disease of cancer as being present merely because of the existence in the body of "cell rests" or "seeds" which may become cancerous. To the question, "So that at the time this policy was taken out, actually she didn't have cancer, is that right?" he replied that "she didn't have any active cancer; if it isn't active then you don't call it cancer." When it starts to grow and you are able to identify it as that, then it is cancer. "In other words then," the examiner asked, "you don't attempt to say that she had cancer on January 14, at the time that this policy of insurance was taken out?" The physician agreed, "That is correct."

The insuring clause of the contract must be given a common sense construction, said the court. We must assume the parties intended to enter into an enforceable insurance contract. As the seeds of death are sown when the first breath of life is drawn, and flesh is subject to corruption, we cannot say that the parties intended to exclude all diseases which might develop by reason

of the presence in the insured's body of malignant bacteria, disease germs or "cell rests" which may at some later date develop into a lethal force and cause serious illness and death. We therefore conclude that the word "beginning" as used in the phrase "which (sickness) had its beginning," has reference to an illness or medically recognized disease and not merely to a condition which might in the future give rise to a disease. The court therefore concluded that, on the basis of the physician's testimony, the jury was justified in finding that the deceased did not have cancer at the time the policy was issued, and accordingly the judgment in favor of the plaintiff was affirmed.—*American Casualty & Life Co. v. Gueringer*, 205 S. W. (2d) 423 (Texas, 1947).

Miscellany

INFANT MORTALITY

The National Office of Vital Statistics, U. S. Public Health Service, Federal Security Agency, Washington, D. C., has just released a summary on infant mortality in the United States for 1945. The record of progress is impressive. From 99.9 deaths per thousand live births for the birth registration states in 1915, the infant mortality has decreased almost continuously to 38.3 in 1945. However, the reduction was not shared equally by each of the age groups. The rates of decline vary inversely with age. The largest decreases occurred for infants over 1 month of age, the rate for the 6 to 11 months age group having dropped 80 per cent and that for the 1 to 5 months age group 71 per cent since 1915. The corresponding relative decreases for the age groups under 1 month and under 1 day were 45 per cent and 25 per cent, respectively. These differences in the rate of decrease for each age group have been accompanied by an increase in the importance which mortality during the earliest days of life bears to total infant mortality. Neonatal mortality (i. e., mortality under 1 month of age) constituted a decidedly greater proportion of total infant deaths in 1945 than in 1915. This increase, however, was not general throughout the first month of life but was confined to the early neonatal period. In 1915, 30.1 per cent of all infant deaths occurred under 1 week of age; by 1945 this proportion had increased to 51.6 per cent. On the other hand, the proportion of infant deaths occurring during the second, third and fourth weeks of life and in each of the succeeding months decreased during these years.

The variation in mortality by age is striking, the probability of survival through infancy increasing sharply as the older ages are attained. Mortality during the first day of life is extremely high in comparison with each of the other age groups. After 1 day and under 1 month of age the infant mortality rates decrease rapidly but remain at a relatively high level, and the mortality rate of 24.3 per thousand for the entire neonatal period contrasts sharply with the second largest monthly rate of 2.8 for the second month of life. In comparison of the neonatal mortality rate with that for the 1 to 11 months group, it appears that more infant deaths occur during this period than during the remainder of infant life.

The greater ability of female infants to survive as compared with male infants was observed. The 1945 infant mortality rate for all males under 1 year of age was 42.7 and for females was 33.6. A similar sex differential appears in each age group but is greatest at the youngest ages and tends to decrease with increasing age, the mortality rate for male infants exceeding that for female infants by 32 per cent during the first month of life, by 22 per cent during 1 to 5 months, and by 15 per cent during 6 to 11 months.

Infant mortality is much higher among Negro infants than among white infants and is still higher among other nonwhite than among Negro infants. The rates in 1945 for these racial groups (white, Negro, other nonwhite) were 35.6, 56.2 and 74.3, respectively. These differences are due chiefly to the relatively greater mortality among nonwhite infants at the older ages; the racial differences in neonatal mortality, although substantial, are small compared with mortality during the remainder of infant

life. The neonatal mortality rate for Negroes exceeds the neonatal mortality rate for whites by 38 per cent, and the corresponding rate for nonwhite infants other than Negro is 21 per cent greater than the rate for whites. Between 1 and 11 months of age, however, the mortality rate for Negro infants is twice that for white infants and the rate for other nonwhite infants is over three and a half times greater than that for white infants.

Deaths from communicable disease are relatively frequent throughout the first year, whereas deaths from causes associated with prenatal conditions and with birth trauma usually occur during early infancy. For mortality from the pneumonias and influenza and from diarrhea, enteritis and ulceration of the intestines, the first month of life is the most hazardous. The preponderant number of deaths from premature birth, congenital malformation and injury at birth occur during the neonatal period, and more than half the deaths from premature birth and from injury at birth occur during the first day of life.

From 1920 to 1945 the decrease which occurred in total infant mortality was due chiefly to progress in the control of the major communicable causes of death. The infant mortality rate for pneumonia and influenza dropped 62 per cent from 13.8 in 1920 to 5.3 in 1945; and infant mortality from diarrhea, enteritis and ulceration of the intestines declined from 14.9 to 3.0, or 80 per cent. Large proportionate decreases also occurred for whooping cough, syphilis, tuberculosis, convulsions, measles, diphtheria and scarlet fever.

The mortality rates for the nonwhite races greatly exceed those for white infants for most of the causes which usually result in death during postneonatal infancy. The pneumonia and influenza mortality rate was 4.5 among white infants and 10.9 among Negro infants. Among nonwhite infants other than Negro this group of diseases caused 16.6 deaths per thousand births and was the leading cause of death. The mortality rate for diarrhea, enteritis and ulceration of the intestines for white infants was 2.7 as compared with 4.7 for Negro infants and 10.8 for other nonwhites. Other causes which had strikingly higher rates among the nonwhite than among the white races were whooping cough, tuberculosis, syphilis, diseases of the respiratory system (other than pneumonia and influenza) and accidental causes.

Only small racial differences appear in the relative frequency of deaths from causes peculiar to early infancy. Mortality from premature birth was lowest for nonwhite infants other than Negro, and the mortality rates for congenital malformations and for injury at birth were greater in the white than in either of the nonwhite groups.

To compare again infant mortality conditions in 1915 and 1945, improved conditions of public health and advances in medical knowledge with regard to the problem of infant disease and death have resulted in a tremendous reduction in mortality during later infancy but have exerted a much smaller influence on mortality resulting during earliest infancy from congenital conditions and difficult birth. Although much room for improvement still remains, further progress in the reduction of total infant mortality will depend increasingly on improvement of the prenatal and early extrauterine environment.

In considering these data, qualification must be made for under-registration of births and of infant deaths. Death registration is probably least complete among infants surviving less than one day. This is due, in part, to the possibility of such deaths being reported as stillbirths. Mortality rates are probably understated for earliest infancy, while those for older infants are somewhat overstated.

In comparing annual infant mortality rates consideration must be given to the effect of changing annual numbers of births. Since the group of infants who die during a given year is comprised of infants born during both the given and the preceding years, the annual number of births does not constitute the true infant population exposed to the risk of dying; and changes in the annual number of births introduce a measure of bias into the conventionally computed infant mortality rate. The infant mortality rate for 1945, adjusted for the decrease in the number of births from 1944 to 1945, is 38.2 per thousand.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

American Heart Journal, St. Louis

34:627-784 (Nov.) 1947

High T Waves in Earliest Stage of Myocardial Infarction. W. Dressler and H. Roessler.—p. 627.

*Electrolyte Changes and Electrocardiogram in Diabetic Acidosis. Helen E. Martin and Maxine Wertman.—p. 646.

Comparative Study on Use of Purified Digitalis Glycosides, Digoxin, Digitoxin and Lanatoside C, for Management of Ambulatory Patients with Congestive Heart Failure. R. C. Batterman and A. C. DeGraff.—p. 663.

Electrocardiographic Changes in Early Syphilis. H. P. Steiger and J. Edeiken.—p. 674.

*Comparative Study of Potassium Thiocyanate and Other Drugs in Treatment of Essential Hypertension. A. Ruskin and W. F. McKinley.—p. 691.

Analysis of Time Relationships Within Cardiac Cycle in Electrocardiograms of Normal Men: IV. Effect of Position Change on Relationships of Q-T and T-P Intervals Respectively to Cycle Length (R-R Interval). I. Schlamowitz.—p. 702.

Heart Disease in the South: II. Statistical Survey of 117 Deaths Due to Rheumatic Heart Disease. J. E. Holoubek and Alice B. Holoubek.—p. 709.

Id.: III. An Analysis of 217 Deaths Due to Arteriosclerotic Heart Disease. J. E. Holoubek and Alice B. Holoubek.—p. 715.

Electrolyte Changes in Diabetic Acidosis.—The study reported by Martin and Wertman was undertaken to see if in diabetic acidosis there was any correlation between p_{H} , calcium, potassium and magnesium levels and the electrocardiographic changes. Patients who entered the hospital in severe diabetic acidosis were followed for several days with synchronous determinations of blood chemistry and electrocardiograms. Sagging of the ST segments was a prominent feature of the electrocardiogram on entry when acidosis was severe. This change usually disappeared within twenty-four hours. In 16 of 19 instances of depressed ST segment, the p_{H} or carbon dioxide combining power was low. However, in about a third of the patients whose records showed isoelectric ST segments the p_{H} or carbon dioxide combining power was low. Experimentally, depression of the ST segment occurs with moderate elevation of the serum potassium; but there was no correlation with changes in serum potassium levels. Thirty-seven records showed prolonged QT intervals, many of these occurring one to four days after intensive therapy had been instituted. Sixteen of these were associated with low total or ionized serum calcium or potassium. Twenty-one of the records which showed prolonged QT intervals were associated with normal levels of serum calcium and potassium. There were 7 patients in whom the QT interval was greatly prolonged; in 6 of these the serum calcium or potassium levels were below normal. These observations suggest that in some cases factors other than serum calcium and potassium depletion may be responsible for the prolongation of the QT interval. There was a high degree of correlation between low T waves and low serum potassium levels. The T waves increased in amplitude with return of the potassium to normal or elevated levels. The relation of low serum magnesium to the electrocardiographic changes needs additional study. The factors present in diabetes mellitus which may affect the myocardium are complex and include the relation between extracellular and intracellular electrolytes, cardiac nutrition in acidosis and ketosis and the effects of anoxia and azotemia.

Potassium Thiocyanate in Essential Hypertension.—Ruskin and McKinley administered six drugs, unknown to the patients, in various rotations to 68 patients with uncomplicated essential hypertension. Periods of therapy were interspersed with rest or control intervals of two to four weeks. Potassium thiocyanate was started at 0.2 Gm. three times a day. Serum potassium thiocyanate concentration was determined by a method adapted to the Evelyn colorimeter. Maintenance dosages of potassium thiocyanate necessary to maintain therapeutic blood levels varied from 0.2 to 1.2 Gm. daily, and the drug was continued for three months. Blood pressures were recorded twice weekly between 9 and 10 a. m., in the same arm, by the same observer. The best symptomatic relief was obtained from the administration of a placebo or nicotinic acid. "Glucophylline" (a methyl xanthine derivative), phenobarbital and mannitol hexanitrate decreased the complaints of fewer patients and increased the symptoms in more cases than the placebo or nicotinic acid. Potassium thiocyanate, on the other hand, maintained or increased patients' complaints in almost one half of the cases and decreased them in less than one third. Increase of symptoms undoubtedly occurred more frequently at serum thiocyanate levels above 15 mg. per hundred cubic centimeters but was also frequent and, at times, perilous at the more commonly accepted "therapeutic" levels. Thus the administration of potassium thiocyanate seems to be unreliable and hazardous. The authors conclude that the efficacy of drugs and other methods in the treatment of hypertension must be viewed with skepticism, particularly in the absence of control observations.

American Journal of Diseases of Children, Chicago

74:399-542 (Oct.) 1947

*Infarction of Lung in Children. Ella Zuschlag.—p. 399.

Vitamin C in Blood and Urine of Newborn and in Cord and Maternal Blood. B. M. Hamil, Bertha Munks, Elsie Z. Moyer and others.—p. 417.

*Thiamine, Riboflavin, Nicotinic Acid, Pantothenic Acid and Biotin in Urine of Newborn Infants. B. M. Hamil, Margaret Coryell, Charlotte Roderuck and others.—p. 434.

*Penicillin in Treatment of Empyema in Children. G. E. Prince and W. J. Temple.—p. 447.

Fallacies Inherent in Proband Method of Analysis of Human Pedigrees for Inheritance of Recessive Traits: Two Methods of Correction of Formula. Madge T. Macklin and H. B. Mann.—p. 456.

Nutritional Requirement of Adolescent and Its Relation to Development of Disease. J. A. Johnston.—p. 487.

Physical Growth During Adolescence. H. C. Stuart.—p. 495.

Improvement of Body Mechanics in Adolescent Children. C. D. Sweet.—p. 503.

Endocrine Aspects of Adolescence. J. P. Pratt.—p. 507.

Infarction of Lung in Children.—According to Zuschlag pulmonary infarctions occur more frequently in children than is generally believed. At least 74 cases are described in the literature, and data on an additional 38 cases are reported in this paper. The etiologic factors in thrombosis are endothelial injury, slowing of the blood flow and changes in the blood. Infection, atelectasis, allergy and venoclysis may be contributory factors. It is usually impossible to distinguish between embolic and thrombotic infarcts. Detailed gross dissections and a large series of microscopic sections are needed in order to make an accurate differentiation. It is believed that emboli more often than primary thrombi are responsible for pulmonary infarctions in children and that the emboli originate in the iliac and femoral veins more often than in other peripheral veins. The fact that the formation of thrombi in a patent ductus arteriosus may be the source of fatal pulmonary embolism constitutes an additional reason for the early ligation of a patent ductus arteriosus. Roentgenograms of the chest in cases with clinical signs suggesting pulmonary infarction may be helpful in establishing the diagnosis. In the majority of cases pulmonary infarction among children is associated with severe infections. The mechanism of death due to occlusion of the pulmonary circulation is still in controversy. The general opinion is that the mechanical factor is the initial one, followed by reflex pulmonary atelectasis, bronchial spasm and reflex spasm of several or all of the pulmonary arteries. Sudden death from pulmonary embolism occurs more rarely in children than in adults. The clinical diagnosis of pulmonary infarction is seldom made in children because coexisting disease may mask the symptoms and signs.

Vitamin B Complex in the Newborn.—Hamil and his associates determined the concentrations of thiamine, riboflavin, nicotinic acid, N¹-methylnicotinamide, calcium pantothenate and biotin in urine from 24 healthy male infants during their first week of life. The maximal average concentrations of thiamine and of pantothenic acid were found in the urine excreted on the third day of life; the maximal average value for riboflavin was found on the first day; and the maximal average concentrations of nicotinic acid, N¹-methylnicotinamide and biotin on the second day. By the seventh day the average concentrations had declined. Thus estimation of the daily excretion of the vitamins indicated that secretion into the urine was high during the first three days, when the loss of weight was rapid and the intake of vitamins small. As the supply of breast milk increased, excretion of vitamins in the urine continued to decrease. The large amounts excreted early in life apparently represent tissue storage during intrauterine development and reduction of the stores in response to changes resulting from the transition to the extrauterine environment.

Penicillin for Empyema.—Prince and Temple present the histories of 9 children with empyema who were treated with varying amounts of penicillin. The ages of the patients ranged from 5 weeks to 5 years. Three patients required surgical drainage after unsuccessful penicillin therapy. Six patients responded well to penicillin, and surgical intervention was not necessary. *Staphylococcus aureus* was the causative agent of the empyema in 4 patients and the pneumococcus in 2 patients. No organisms could be cultured from the empyema fluid of 2 patients. In 1 patient *Hemophilus influenzae* was observed after surgical drainage, but this organism was not believed to have been the etiologic agent. That small doses may be adequate for infants is illustrated in case 4, in which the patient received penicillin alone in amounts of 2,500 units intramuscularly every three hours and two intrapleural injections of 10,000 units each. This patient recovered without surgical drainage. The last 4 patients received 15,000 or 20,000 units of penicillin intramuscularly every three hours and frequent intrapleural injections of 30,000 to 50,000 units in 10 cc. of isotonic solution of sodium chloride. All patients who responded to medical treatment did so within one week after penicillin was started. The 3 patients who did not respond without surgical drainage had complications which may have prevented successful penicillin therapy. Two had pneumothorax with bronchial fistula. The lung could not be reexpanded by aspiration. One of these patients had large bands and clots of fibrin, which could not be removed through a needle. The third patient also had fibrin clots, and the purulent fluid was too thick to aspirate. The authors conclude that the results in children are similar to those obtained in adults.

American Journal of Medicine, New York

3:509-662 (Nov.) 1947

SYMPOSIUM ON ALLERGY

- Classification of Histologic Reactions in Allergic Diseases. M. G. Bohrod.—p. 511.
Immunology of Allergic Disease. R. A. Cooke.—p. 523.
Quantitative Immunochemical Aspects of Some Allergic Reactions. E. A. Kabat.—p. 535.
Role of Histamine in Anaphylaxis and Allergy. B. Rose.—p. 545.
Antihistaminic Drugs: Pharmacology and Therapeutic Effects. S. M. Feinberg.—p. 560.
Allergic Dermatitis: View of Its Immunologic and Biochemical Implications. C. N. Frazier and A. A. Small.—p. 571.
*Drug Allergy. W. B. Sherman.—p. 586.
Working Classification of Asthma. F. M. Rackemann.—p. 601.
Recognition of Emotional Factors in Allergic Manifestations. P. A. Glike and W. J. Kerr.—p. 607.
Allergy in Nervous System: Review of Literature. L. D. Stevenson and E. C. Alvord Jr.—p. 614.
Normal and Abnormal Heart in School Child. M. H. Wendkos.—p. 621.
Juvenile Electrocardiogram. D. Littmann.—p. 626.
Dicumarol: Its Action, Clinical Use and Effectiveness as Anticoagulant Drug. N. W. Barker, E. A. Hines Jr., W. F. Kvale and E. V. Allen.—p. 634.

Drug Allergy.—According to Sherman allergy to drugs is common and its manifestations vary in importance from transitory cutaneous eruptions to fatal reactions. The symptoms which are considered due to sensitization include not only the

usual allergic symptoms of asthma, rhinitis, urticaria and angioedema but drug fever, leukocytosis, arthralgia, lymphadenopathy and many types of cutaneous eruptions. There is also considerable evidence that hepatitis, agranulocytosis and thrombocytopenia due to drugs are phenomena of sensitization rather than of primary toxicity. In sensitization due to protein drugs, circulating antibodies are usually demonstrable and skin tests are of value in diagnosis. In cases due to the nonprotein drugs, antibodies are rarely demonstrated by the usual methods and skin tests, except for patch tests in certain types of dermatitis, are of little diagnostic value. Microscopic studies have demonstrated widespread visceral lesions, chiefly arteritis and focal necrosis, in patients with clinical evidences of drug sensitization. The diagnosis of drug allergy depends primarily on a knowledge of its diverse manifestations.

American J. Obstetrics and Gynecology, St. Louis

54:723-904 (Nov.) 1947. Partial Index

- Late Toxemias of Pregnancy: The Number One Obstetrical Problem of the South. R. A. Ross.—p. 723.
*Treatment of Eclampsia and Pre-Eclampsia with Veratrum Veride and Magnesium Sulfate. F. C. Irving.—p. 731.
Mycotic Vulvovaginitis and Vaginal Fungi: Report of 280 Patients. C. P. Jones, B. Carter, W. L. Thomas and others.—p. 738.
Management of Breech Presentation. H. H. Ware Jr., W. C. Winn and E. C. Schelin.—p. 743.
Nature of Dysmenorrhea. R. Torpin, R. A. Woodbury and G. P. Child.—p. 766.
Value of X-Ray Studies of Pelvis in Obstetrics. O. H. Jones.—p. 776.
Analysis of 416 Consecutive Cesarean Sections. C. J. Andrews, R. B. Nicholls and W. C. Andrews.—p. 791.
Cesarean Section in Potentially Infected Patients Using Sulfathiazole in Uterus and Peritoneal Cavity. J. M. Settle and L. A. Wilson.—p. 801.
Aspiration Curettage of Endometrium in Cancer Clinic: Analysis of 200 Cases. G. A. Williams and C. B. Stewart.—p. 804.
Treatment of Urinary Stress Incontinence by Implantation of Tantalum Plate. M. A. Goldberger and A. M. Davids.—p. 829.
Low Spinal Nupercaine Anesthesia in Obstetrics. H. E. Schmitz and G. Baba.—p. 838.
Psychic Component of Pain in Gynecology and Obstetrics: Sensory Conditioning Process. W. E. Hunter.—p. 848.
Ethinyl Estradiol. C. H. Birnberg, S. H. Livingston, L. Kurzrock and D. A. Sherber.—p. 855.
Study of Cervical Cultures Taken in Cases of Acute Gonorrhea with Special Reference to Phases of Menstrual Cycle. Marie L. Koch.—p. 861.
Cold Pressor Test and Kidney Function. L. D. Odell and Gloria T. Aragon.—p. 867.
Advanced Abdominal Pregnancy. Louise Branscomb.—p. 874.
*Maternal Rh Sensitization and Clinically Normal Child. Bettina B. Carter.—p. 879.

Veratrum Veride and Magnesium Sulfate in Eclampsia.

—Irving outlines the routine treatment of eclampsia in use at the Boston Lying-In Hospital and reviews the results obtained with this method in 32 cases. He analyzes some collected statistics on the results obtained with magnesium sulfate alone and on those attending the use of veratrine with or without magnesium sulfate. Although the results in both series are good, the advantage appears to be with the veratrine group. For a number of years the main reliance at Boston Lying-In Hospital was on magnesium sulfate alone given intravenously after the technic of Lazard. The results have been so much more satisfactory since Bryant's introduction of veratrine that its use will probably be continued.

Maternal Rh Sensitization and Normal Child.—Carter reports 4 cases of maternal sensitization to the Rh factor in which clinical manifestations of congenital hemolytic disease failed to develop in the children. It is suggested that this may not be an unusual phenomenon. The author points out that since both blocking antibodies and regular agglutinins are involved in this series, the failure of clinical hemolytic disease to develop in the children cannot be ascribed to the lack of one or another type of antibody. The choice would seem to lie between the theory of inaccessibility of maternal agglutinins to the baby's red cells, and the postulate that the child is relatively immune to the maternal antibody. The first alternative is favored by Dockeray and Sachs, who suggest that antibodies pass the placental barrier only under certain conditions. However, in 3 of the 4 cases antibodies to Rh were demonstrable in the blood of the child. It is possible that individual infants may vary in their ability to withstand the hemolytic or agglutinative effects of the maternal antibodies.

American Journal of Pathology, Ann Arbor, Mich.

23:915-1137 (Nov.) 1947

- Studies of Thermal Injury: III. Pathology and Pathogenesis of Cutaneous Burns: Experimental Study. A. R. Moritz.—p. 915.
- Granuloma, Characteristic "Qualitative" Change in Focal Anaphylactic Inflammation. J. W. Goldard.—p. 913.
- Hemoglobin Crystals, Casts and Globules in Renal Tubules of Guinea-Pigs Following Chemical Hemolysis. R. C. Dunn and S. H. Webster.—p. 967.
- Glomerulonephritis Occurring in Experimental Brucellosis in Dogs. G. Margolis, W. D. Forbus, Grace P. Kerby and T. N. Lide.—p. 983.
- Fatal Inclusion Disease Pneumonitis in an Adult. G. C. McMillan.—p. 995.
- Intranuclear Inclusions in Islands of Langerhans of Chickens. A. M. Lucas.—p. 1005.
- Fate of Endocardial Vegetations Following Penicillin Treatment of Bacterial Endocarditis. A. J. Geiger and S. H. Durlacher.—p. 1023.
- Studies on Experimental Phosgene Poisoning: I. Pathologic Anatomy of Phosgene Poisoning, with Special Reference to Early and Late Phases. D. R. Coman, H. D. Bruner, R. C. Horn Jr. and others.—p. 1037.
- Pathogenesis of Congenital Polycystic Lung and Its Correlation with Polycystic Disease of Other Epithelial Organs: Reconstruction of Cystic Elements in 2 Cases. R. F. Norris and R. M. Tyson.—p. 1075.
- Gingival Biopsy for Diagnosis of Generalized Amyloidosis. I. J. Selikoff and E. H. Robitzek.—p. 1099.

Fate of Endocardial Vegetations Following Penicillin.

—Geiger and Durlacher say that a number of clinics, including their own, have reported cases of both acute and subacute bacterial endocarditis in which penicillin treatment was followed by the disappearance of all symptoms and sterilization of the blood for periods now reaching three and one-half years. Such enduring remissions in a disease that usually runs its course to death within one year speak convincingly of cure. The argument that these lesions may not be healed and may merely represent examples of the rare or hypothetical "bacteria-free" stage of the disease is refuted by the considerable number of clinically cured patients. Complete and ultimate proof of cure rests on the demonstration of healed and sterile remnants of vegetations in previously treated patients following death from other causes. Four such cases are reported in this paper. The healing process evidently results in the disappearance of bacteria from the lesions, not merely their incarceration within the vegetations.

American Journal of Public Health, New York

37:1371-1512 (Nov.) 1947. Partial Index

- Place of Nutrition in Public Health Program. W. Jameson.—p. 1371.
- Outbreak of Smallpox in New York City. I. Weinstein.—p. 1376.
- Control of Cross-Infections in Infants' Wards by Use of Triethyleneglycol Vapor. C. G. Loosli, Margaret H. D. Smith, R. L. Gauld and others.—p. 1385.
- Epidemic of Mild Gastroenteritis of Unknown Etiology Presumably Spread by Contaminated Eating Utensils. M. A. Pond and J. S. Hathaway.—p. 1402.
- *Relation of Certain Cooking Procedures to Staphylococcus Food Poisoning. Dorothy L. Hussemann and F. W. Tanner.—p. 1407.
- Functions of Standing Orders for Nurses in Industry. I. R. Tabershaw and Margaret S. Hargreaves.—p. 1430.
- Use of Body Measurements in School Health Program: III. Supplementary Note Supplying Measurement and Rating Equivalents for Thickness of Skin and Subcutaneous Tissue Below Left Scapula and Above Left Ilium. H. V. Meredith and H. C. Stuart.—p. 1435.
- Simplified Procedure for Collection of Basic Data for Dental Program Planning and Appraisal. J. W. Knutson.—p. 1439.
- Union Contract and Industrial Hygiene. B. S. Coleman.—p. 1449.
- Postcensal Population Data for Cities. H. S. Shryock Jr.—p. 1455.

Cooking Procedures and Staphylococcus Food Poisoning.

—Hussemann and Tanner state that the increasing number of confirmed cases of food poisoning resulting from contamination with staphylococcus indicate the need for investigations on the practical aspects of this problem. They report an attempt to establish thermal death time-temperature relationships for one strain of staphylococcus in cream filling. In the method used for mixing and cooking cream filling, the mixture was not boiled. This method is in harmony with the principles for proper starch and egg cookery. The thermal death time-temperature relationships determined here may perhaps be applicable to the feasibility of rebaking cream-filled mixtures as a prophylactic measure. When the temperatures attained in the rebaking procedures developed by Stritar, Dack and Jungewaelter were compared with critical thermal death times and temperatures, it appeared that their method allowed for reaching or exceeding the minimum requirements for destruction of staphylococci,

when the cream puffs were maintained in an oven of 190.6 C. for thirty minutes. Apparently there is some merit in the rebaking procedures, but bakers must be cautioned to control the conditions under which the work is done, or a false sense of security may result.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

58:543-696 (Nov.) 1947

- *Cerebral Angiography. P. J. Hodess, C. R. Perryman and R. H. Chamberlain.—p. 543.
- Differentiation of Mediastinal Tumor and Aneurysm by Angiocardiography. M. L. Sussman.—p. 584.
- *Abdominal Arteriography: Technic and Diagnostic Application. F. B. Wagner Jr., A. H. Price and P. C. Swenson.—p. 591.
- Abdominal Venography. P. L. Fariñas.—p. 599.
- Clinical and Roentgenologic Evaluation of Venography: Based on Experience in 1,027 Cases. E. C. Baker.—p. 603.
- Roentgen Visualization of Inferior Vena Cava. B. J. O'Loughlin.—p. 617.
- Uremic Edema of Lungs. I. Doniach.—p. 620.
- Infantile Cortical Hyperostoses: Case Report. S. H. Kane and F. F. Borzell.—p. 629.
- Etiology of Infantile Cortical Hyperostoses. P. J. Delano and C. D. Butler.—p. 633.
- Mesenteric Thrombosis. L. A. Harrington.—p. 637.
- Liposarcoma of Capsule of Left Kidney Complicating Nephrolithiasis and Pyonephrosis: Case Report with Autopsy. J. Tesler and H. Koiransky.—p. 641.
- Roentgen Study of Sternoclavicular Region. M. Ritvo and M. Ritvo.—p. 644.
- *Some Aspects of Results of Radiation Treatment of Carcinoma of Cervix Uteri. I. Lampe.—p. 651.

Cerebral Angiography.—Hodes and his co-workers report experiences with cerebral angiography in 100 patients. In most of the patients the technic employed was that of percutaneous injections of the carotid artery. Thorium dioxide ("thorotrast," 10 to 12 cc. for each injection in adults and 8 cc. in children) has been used routinely. Generally two injections have been necessary, one for lateral exposures, the second for anteroposterior views. Patients under 15 years of age are usually given a general anesthetic, and in adults a local anesthetic alone has been used routinely. There were no untoward reactions to the contrast medium. The procedure is not advised during the acute phase of cerebral accidents. The importance of cerebral angiography in the recognition and localization of intracranial aneurysms cannot be overemphasized. It is the only certain method of making that diagnosis preoperatively and is the only hope of identifying multiple intracranial aneurysms before operation or death. Congenital, arteriosclerotic and cavernous sinus arteriovenous aneurysms, their symptomatology, differentiation and complications are described. Six illustrative cases are reported; they stress the angiographic recognition of hemorrhage into the sylvian fissure. Confusing variations in the appearance of arteriosclerotic and arteriovenous aneurysms of the cavernous sinus are illustrated. Less common than cerebral aneurysms or brain tumors, angiomatous malformations lend themselves beautifully to diagnosis by cerebral angiography. Six illustrative cases are given. Occlusion of the carotid artery is frequently unsuspected clinically but may be readily diagnosed by cerebral angiography. The displacement patterns of tumors in various portions of the brain are illustrated by 12 cases. Meningiomas produce angiographic patterns which may vary greatly depending on the vascular bed of the tumor. The angiographic patterns of oligodendrogliomas may be similar to those found in glioblastoma multiforme. Metastatic adenocarcinoma of the brain may be unusually vascular and readily demonstrable by cerebral angiography.

Abdominal Arteriography.—Wagner and his co-workers employed a simple technic of abdominal arteriography using a 15 cm. 18 gage malleable needle and a hand syringe for injection in 26 consecutive instances. Indications for this roentgenologic study in cases of aneurysm, aortic occlusion, peripheral vascular disease, abdominal tumors, hypertension and hydro-nephrosis associated with aberrant vessels are discussed and illustrative arteriograms are presented. Although abdominal arteriography was performed without untoward reactions in this series, it is not without potential dangers. It should be employed as a diagnostic adjunct by carefully trained personnel only after simpler and standard studies have failed.

Radiation Treatment of Carcinoma of Cervix Uteri.—Lampe reports the survival experience in 1,130 patients with carcinoma of the cervix uteri after radiation treatment consisting of a combination of external roentgen irradiation followed by vaginal and uterine radium irradiation at the University of Michigan. The data on survival, calculated on an "absolute" basis, are presented for each year of the twelve year period 1932 to 1943, inclusive, by means of survival curves in which the years after treatment are plotted along the horizontal axis and the percentage survivors along the vertical axis. Comparison of results for each of the twelve years, following elimination of the effect of variation in frequency distribution of anatomic extent by means of the so-called "standardized" survival curve, demonstrates the "absolute" five year survival percentage to have risen from between 20 to 25 per cent for the years 1932 to 1935 inclusive to above 40 per cent for the years 1938 and 1939. Study of the four, three and two year survival curves indicates that this gain is essentially maintained for the years 1940 to 1942 inclusive. Analysis of the survival curves for the twelve years shows that prediction of five year results on the basis of three year survival figures may be misleading unless there is some evidence to indicate that the shape of the survival curve has not altered. The decreasing survival percentages with increasing anatomic extent of the neoplasm is well demonstrated by the survival curves calculated for each clinical group. The distribution of the cases among the grades of histopathologic differentiation is not significantly different among the twelve years. Some evidence is found which suggests that the results are better in the less well differentiated neoplasms. This suggestion cannot be accepted as proved, since analysis shows that the difference in results may be due solely to sampling variation.

American Journal of Surgery, New York

74:499-793 (Nov.) 1947. Partial Index

- Further Studies in Skull Fractures and Brain Injuries. H. E. Mock.—p. 502.
- Causalgia. F. H. Mayfield.—p. 522.
- Role of Sympathetic Nervous System in Traumatic Surgery as Applied to Fractures, Causalgias and Amputation Stumps. H. G. Pretty.—p. 527.
- Ununited Fracture of Neck of Femur: Causes of Failure of Internal Fixation and Treatment. I. E. Siris and J. H. Mulholland.—p. 535.
- Technic of High Subtrochanteric Osteotomy. E. Asbury.—p. 553.
- Management of Injuries to Large Blood Vessels in Wounds of Violence. L. G. Herrmann.—p. 560.
- Study of Bone Matrix: Applications of Its Replacement with Artificial Substitutes. S. S. Hudack, J. W. Blunt and E. M. K. Darby.—p. 579.
- Joint Mobilizing Operations on Hip, Knee and Shoulder for Complications Following Trauma. P. H. Harmon.—p. 598.
- *Periosteum for Repair of Fascial Defects in Paratibial Region of Leg: Result of Its Transposition. N. J. Giannestras.—p. 614.
- *Practical Procedures for Correction of Scar Contractures of Hand. P. W. Greeley.—p. 622.
- Observations on Management of Suppurative Arthritis of Knee Joint. O. P. Hampton Jr.—p. 631.
- Conservative Treatment of Semilunar Cartilage Injuries of Knee Joint: Evaluation of End Results Over a Ten-Year Period. N. J. Howard.—p. 646.
- *Multiple Muscle Substitution for Correction of Facial Paralysis. W. M. Adams.—p. 654.
- Surgical Management of Extensive Avulsions of Skin. C. Mathewson Jr. and A. Gerber.—p. 665.
- Treatment of Fractures of Os Calcis by Open Reduction and Internal Fixation. A. H. Whitaker.—p. 687.
- Further Observations on Penetrating Wounds of Heart and Pericardium. C. H. Maguire and R. A. Griswold.—p. 721.
- Use of Cutis Graft Material in Treatment of Trauma and Its Results. J. E. Cannaday.—p. 732.
- Surgical Treatment of Irradiation Dermatitis and Carcinoma. D. M. Glover.—p. 735.
- Diagnosis of Clostridial Myositis. K. F. Lowry and G. M. Curtis.—p. 752.
- Repair of Major Tendon Ruptures by Buried Removable Suture. H. L. McLaughlin.—p. 758.

Periosteum for Repair of Fascial Defects in Paratibial Region.—Giannestras presents the histories of 2 men, aged 23 and 24, respectively. In 1 patient a mass had appeared at the midportion of the leg just lateral to the edge of the tibia after the cast was removed following a compound fracture. After the man returned to work this mass became larger and painful. The condition was diagnosed as muscle hernia. A curved incision was made on the lateral aspect of the leg, and a defect of the fascia was found at the level of the midshaft of the tibia.

This defect permitted protrusion of the underlying musculature through the opening. There was thinning of the fascia. An attempt was made to reattach the fascia to the periosteum, but this was impossible. An incision was made on the periosteum at its medial edge, and a flap was lifted and attached to the fascia. After closure of the wound a cast extending from the toes to the mid thigh was applied to the leg, with the ankle at 90 degrees dorsiflexion and the knee at 15 degrees flexion. The cast was removed at the end of six weeks. During this time the patient was not permitted to bear weight on the extremity. Following removal of the cast, active weight bearing was permitted. Fourteen months after the operation, when control biopsies were made at two sites, it was found that the area of operation was well healed. A new layer of tissue covered the anteromedial surface of the tibial shaft, and this tissue was well adherent to the bone. Microscopic sections were made of both biopsy specimens. In neither case was bone developed by the transposed periosteum, although the literature indicates that periosteum begets bone. The periosteum remained attached along the entire length of the graft, thus maintaining a good circulation, which may explain why the periosteum did not go on to produce bone.

Correction of Scar Contractures of Hand.—Greeley says that all incisions, suture lines and skin graft edges must be calculated so that they will fall either transversely or obliquely across the longitudinal axis of the flexor or extensor surfaces of the hands and fingers. If this design is carried out and a postoperative shortening of the suture line should occur, the pull will lose its force in a lateral direction and therefore will not interfere with the normal flexion and extension mechanisms. Whenever possible, local tissues should be used for reconstructing hand contractures. Normal hand skin withstands daily trauma better, and sensation is more nearly normal. Stereognosis can never be replaced by skin grafts from other areas, because the special organs for this sensation are found only in the pacinian corpuscles located normally in the finger pulps. Consequently, when correcting linear contractures wherein there is sufficient available skin along the borders, a single or multiple Z-plasty will give the best results with minimum surgery. Free full-thickness skin grafts give the best surface-bearing qualities and maximum degree of elasticity on flexor surfaces. Thick split-thickness grafts provide adequate covering for extensor surface defects and are preferred in this area because of the simpler technic associated with their use. The use of pedicle flaps is reserved for instances in which it is necessary to carry subcutaneous fat with the skin grafts. This condition arises primarily in covering exposed tendons, bone or joints, or when it is planned to reelevator the graft at a future date for the purpose of carrying out subsequent tendon, bone or joint surgery.

Correction of Facial Paralysis.—Adams points out that in paralysis of the facial nerve the larger the number of different muscles which can be brought into play, the better the function one will be able to restore to the paralyzed area. The masseter muscle is most suitable for reanimating the corner of the mouth and the lower part of the paralyzed face. By transplanting the end of the insertion of the muscle at the lower border of the mandible, one is less likely to disturb the nerve supply and the pull is in the desired direction. The temporalis muscle is utilized to restore support and function to the paralyzed upper and lower eyelids. Again, the end of the insertion of the muscle is transplanted. Some patients with facial paralysis have extremely active muscles of the brow and forehead. An active forehead on one side, in contrast to the blank immobility and drooping lid and brow of the paralyzed side, presents a conspicuous disfigurement. By transferring a muscle flap of the active frontalis to the muscle bed of the paralyzed eyebrow, attaching it just beyond the midline of the forehead, one can not only support and elevate the drooping brow but also restore some degree of upward motion in this area. The following facts should be borne in mind in the transplantation of muscle flaps: the flaps should be of sufficient size to insure the necessary strength and support to the paralyzed region; the tension on the flaps should be ample to insure support and motion. Undue

stretching may lead to ischemia of the flaps; too much angulation of the pedicle might interfere with its circulation. In separating the muscle fibers to form the flap care must be taken not to disturb the nerve supply any more than necessary.

Annals of Internal Medicine, Lancaster, Pa.

27:683-860 (Nov.) 1947

- *Hyperventilation: Analysis of Clinical Symptomatology. G. L. Engel, E. B. Ferris and Myrtle Logan.—p. 683.
- Survey of Recent Developments Concerning Concepts of Coronary Disease and Its Management. L. N. Katz.—p. 705.
- Allergy: Trends and Their Implications. S. M. Feinberg.—p. 723.
- Splenomegaly in Congestive Heart Failure. N. O. Fowler Jr.—p. 733.
- Probable Genetic Predisposition to Viral Pneumonia. E. H. Kotin.—p. 738.
- Management of Hypertension. P. D. White.—p. 740.
- Atypical Face Pain: Statistical Consideration of 66 Cases. T. W. McElin and B. T. Horton.—p. 749.
- *Streptomycin in Treatment of Tuberculosis in Humans: I. Meningitis and Generalized Hematogenous Tuberculosis. W. McDermott, C. Muschenheim, Susan J. Hadley and others.—p. 769.

Hyperventilation.—Engel and his co-workers studied the symptoms developing during hyperventilation in patients with this syndrome and in medical students and staff members between the ages of 20 and 35 years in whom the same symptoms were reproduced by voluntary hyperventilation. Hyperventilation may occur as a response to certain intense emotional experiences in normal persons, as a vegetative neurotic symptom, as a hysterical symptom, as a symptom of diffuse encephalopathy and the action of certain drugs and as a response to anoxia. The symptoms may be divided into those related to reduction in consciousness and those related to tetany. Reduction in consciousness is observed to correlate well with the degree of slowing of frequency of the electroencephalogram and is usually pronounced when the mean frequency is reduced below 5.0 per second. Slowing of the electroencephalographic frequency during hyperventilation is more decided with rapid reduction in arterial carbon dioxide content, low blood sugar, low oxygen tension of inspired air, the erect posture, amyl nitrite and glyceryl trinitrate. Conversely, high blood sugar, high oxygen tension and the recumbent posture diminish slowing of the electroencephalogram. Intravenous injection of calcium chloride and nicotinic acid has no effect on the electroencephalogram during hyperventilation. Tetany is unrelated to changes in the electroencephalogram and occurs with longer periods of hyperventilation. The numbness and tingling probably are also peripheral in origin. Actual syncope is unusual during hyperventilation. Four different mechanisms have been observed, namely, concurrent or delayed vasodepressor syncope, accentuation of already present orthostatic hypotension, hysterical syncope and central type.

Streptomycin in Tuberculosis in Human Beings.—McDermott and his co-workers treated 17 patients with bacteriologically proved meningeal, miliary or other forms of generalized hematogenous tuberculosis with streptomycin. A constant daily dose of 3 Gm. of the drug administered intramuscularly in six or eight divided doses was used in 12 adults. In 5 children and infants the dose was adjusted to body weight (20,000 micrograms per kilogram). The total period of treatment was one hundred and twenty days. Patients with meningitis received streptomycin intrathecally as well as by the intramuscular route. Individual doses of 0.1 Gm. of streptomycin were administered at intervals ranging between twenty-four and seventy-two hours for total periods of sixty to ninety days. The administration of streptomycin was followed in every instance by a striking alteration in the course of the infection. Six of these patients (2 with meningitis, 2 with miliary and 2 with other forms of generalized hematogenous tuberculosis) have attained complete remissions which have been maintained for five to twelve months after the completion of the treatment. A seventh patient is apparently recovering one year after an acute miliary infection. In another 7 patients, all with miliary tuberculosis, death resulted from their infection. The remaining 3 patients have only recently completed treatment. Meningitis was present or appeared during treatment in 7 of 13 patients with miliary tuberculosis but was the principal cause of death in only 2 instances. In all 4 patients from whom bacilli resistant to streptomycin *in vitro* were obtained the

miliary infection resumed a progressive course, which terminated fatally despite further treatment with streptomycin. Microscopic and bacteriologic examination of the tissues in 6 of the fatal cases revealed changes which could be correlated with the clinical, bacteriologic and roentgenologic state of the infections at the time of death. Until more information is available it seems advisable to limit the period of streptomycin therapy to six or eight weeks. Although this procedure may increase the chance of post-treatment relapse, it should appreciably decrease the risk of relapse with streptomycin-resistant organisms.

Archives of Internal Medicine, Chicago

80:423-566 (Oct.) 1947

- *Aspergillosis and the Aspergilli: Report of Unique Case of the Disease. E. P. Cawley.—p. 423.
- *Erythema Nodosum. C. B. Favour and M. C. Sosman.—p. 435.
- Blood Pressure Readings of 75,258 University Students. Ruth E. Boynton and Ramona L. Todd.—p. 454.
- Incidence and Clinical Significance of Coronary Artery Disease in Diabetes Mellitus. S. Stearns, M. J. Schlesinger and A. Rudy.—p. 463.
- *Marfan's Syndrome in Adult: Dissecting Aneurysm of Aorta Associated with Arachnodactyly. J. R. Tobin Jr., E. B. Bay and Eleanor M. Humphreys.—p. 475.
- Effects on Cardiovascular System of Fluids Administered Intravenously in Man: V. Function of Cutaneous Capillaries and Lymphatic Vessels. M. D. Altschule, A. S. Freedberg and M. J. McManus.—p. 491.
- *Sensitivity of Skin to Histoplasmin in Differential Diagnosis of Pulmonary Disease. M. E. Groover Jr., E. A. Cleve, S. Bornstein and others.—p. 496.
- Infectious Diseases: Thirteenth Annual Review of Significant Publications. H. A. Reinmann.—p. 514.

Aspergillosis.—Cawley reports a unique case of aspergillosis with extensive and widespread involvement of various structures in a boy aged 7½ years. On admission to the hospital he had pneumonia of the lower lobes of both lungs and demonstrable evidence of a cerebellar lesion, which was found on surgical intervention to be an abscess from which *Aspergillus fumigatus* was cultured. Death occurred eight months after admission despite intensive and protracted treatment with penicillin, various sulfonamide compounds, potassium iodide and inhalations of ethyl iodide. Necropsy revealed abscesses of variable size involving the brain, dura, heart, lungs, mediastinum, lymph nodes, spleen, liver, right kidney and right ankle. Invasion by the mold of such structures as the myocardium and kidneys was especially remarkable. Consistently normal results from laboratory studies, with the exception of cultures positive for *A. fumigatus*, were a feature of the disease process. The aspergilli, a genus of molds, are notorious as laboratory contaminants. On rare occasion, as in the author's case, they may be the etiologic agent in production of a specific disease. Manifestations of aspergillosis are protean, and the diagnosis may be difficult. The lungs are the most frequent localization of the primary involvement. Treatment is often disconcerting, there being no specific therapeutic agent.

Erythema Nodosum.—Favour and Sosman report 155 cases of erythema nodosum in 102 adults, 88 of whom were women, and in 53 children, 32 of whom were girls. The patients were between the ages of 3 and 66 years. The disease usually developed during the winter months. A known respiratory infection antedated erythema nodosum in 126 (81 per cent) of the patients. The lag between the infection and the onset of erythema nodosum was usually two to four weeks. In half of the patients for whom cultures were done, beta hemolytic streptococci were grown in material from the throat. Tuberculosis was an uncommon antecedent infection and rheumatic heart disease a rare sequela. Migratory polyarthritis was a part of the clinical picture of erythema nodosum in 80 of the adults and in one third of the children. Isolated attacks of pains in the joints preceded and followed erythema nodosum. Ten per cent of the patients had a chronic form of the disease lasting from months to years. Mild secondary anemia, cervical adenopathy and occasionally enlarged hilar or bronchial nodes characterized the illness. Erythema nodosum may be considered as a hypersensitivity disease. Individual predisposition, a variety of infectious and chemical agents and local trauma contribute to its occurrence. It is not a form of rheumatic fever.

Marfan's Syndrome.—Tobin and his co-workers report 2 cases of arachnodactylia (Marfan's syndrome) associated with dissecting aneurysm of the aorta in a man aged 22 and in a woman aged 35, both of whom died as the result of the aneurysm. These 2 cases together with 4 previously reported make a total of 6 in which there were aortic lesions in the 14 necropsies performed on patients with arachnodactylia. These figures are significant if it is considered that 5 of the 8 patients without aortic lesions were under 28 months of age and that those with aortic lesions were between 14 and 35 years of age. The cardiovascular lesions demonstrated on necropsy included aortic medial necrosis and endocardial lesions which simulate those of rheumatic fever. The former is the more dangerous, resulting in dilatation of the aortic valve ring, the sinuses of Valsalva and the ascending portion of the aorta. Death may occur suddenly from dissecting aneurysm and rupture of the aorta. The role of the endocrine gland, particularly the hypophysis, remains obscure, but in both of the author's cases the hypophysis appeared to contain more than the usual proportion of eosinophilic cells.

Skin Tests in Pulmonary Disease.—Groover and his co-workers made skin tests with tuberculin, histoplasmin and coccidioidin on 1,220 patients with roentgen evidence of pulmonary disease compatible with that of pulmonary tuberculosis. Ninety-three and six-tenths per cent were sensitive to tuberculin, 58.6 per cent were sensitive to histoplasmin and 31.1 per cent were sensitive to coccidioidin. Seven patients in the group were strongly sensitive to histoplasmin and gave negative reactions to tuberculin (0.1 mg. of purified protein derivative) and coccidioidin. The lesions in all 7 were similar, with characteristics of tuberculosis, except for the absence of acid-fast bacilli in the bronchial secretions and of sensitivity to tuberculin. Efforts to isolate a fungus characteristic of *Histoplasma capsulatum* by microscopic examination and mycologic studies of bone marrow, sputum and lymph nodes of the patients with a strong sensitivity of the skin to histoplasmin were consistently nonproductive. Patients with a strong reaction to histoplasmin in a 1 to 1,000 dilution usually showed a mild reaction to coccidioidin in a 1 to 10 dilution; those with a strong reaction to coccidioidin in the 1 to 1,000 dilution usually had a mild reaction to the 1 to 1,000 dilution of histoplasmin. This cross sensitivity reaction is also suggested by the geographic distribution of patients with and without sensitivity to histoplasmin. The incidence of pulmonary calcifications was greater in the group sensitive to histoplasmin than in the groups sensitive to coccidioidin or tuberculin. Of 528 patients for whom a presumptive diagnosis of pulmonary tuberculosis was made by roentgen studies, 117 were observed to have acid-fast bacilli in their bronchial secretions or in gastric washings. The use of the skin sensitivity test to histoplasmin is of limited value in the differential diagnosis of pulmonary disease.

Archives of Ophthalmology, Chicago

38:415-576 (Oct.) 1947

- Beta Irradiation in Ophthalmology. C. E. Iliff.—p. 415.
 Screening Test for Defective Red-Green Vision: Test Based on Eighteen Pseudoisochromatic Plates from American Optical Company's Compilation. L. H. Hardy, Gertrude Rand and M. Catherine Rittler.—p. 442.
 Trachoma: Possible Carrier State. M. Bodian.—p. 450.
 Treatment of Lindau's Disease: Report of Case. S. Bockhoven and P. Levatin.—p. 461.
 Corneal Light Reflex in Diagnosis of Retinal Correspondence. E. Krimsky.—p. 468.
 Transplantation of Vitreous. S. Gartner and B. S. Priestley.—p. 487.
 Use of Telescopic Amblyoscope in Visual Training for Defective Vision. J. B. Feldman.—p. 494.
 *Nature of Glaucoma. H. Elwyn.—p. 506.
 Contact Lenses for Correction of Myopia Complicated by Lesions of Retina and Choroid. P. Tower.—p. 521.

Nature of Glaucoma.—Elwyn thinks that glaucoma is a heredoconstitutional functional disease, involving primarily the function of central regulation of the intraocular pressure. In some persons the central regulation becomes unstable as a result of inherited influences at about middle age or earlier. Impulses from the center reach the effector organ in the eye in normal numbers at times and in smaller numbers at others. As a result, the chemical mediator acetylcholine is produced in an irregular manner at the nerve endings in the effector

organ. The intraocular pressure is normal at times and high at others. The normal intraocular pressure is maintained by the constant volume of the aqueous in the chambers of the eye and by the constant volume of blood in the choroidal vessels. These constant volumes are maintained by the activity of the effector organ in the eye, which consists of three units: the ciliary body and the angle of the anterior chamber with its venous system, which maintain the constant volume of aqueous, and the choroidal vessels, which maintain a constant volume of blood in the choroid. When insufficient impulses from the central regulation reach the units of the effector organ, either the constant volume of the aqueous is increased or the constant volume of the blood in the choroidal vessels is increased, or both are increased. The result is glaucoma with a normal anterior chamber when the increase in the volume of the aqueous predominates, or glaucoma with a shallow chamber when an increase in the constant volume of blood in the choroidal vessels predominates.

Archives of Pathology, Chicago

44:325-444 (Oct.) 1947

- Sensory Nerves of Human Heart. E. F. Hirsch and J. F. Orme.—p. 325.
 Focal Anemia, Leukocytosis and Fatty Infiltration of Liver (So-Called Septic Liver Spots). F. Wenger.—p. 336.
 *Pathogenicity of Bagasse. B. Gerstl, M. Tager and N. A. Marinaro.—p. 343.
 Rhabdomyosarcoma of Bladder: Report of Case and Review of Literature. H. L. Kretschmer.—p. 350.
 Limitation of Spreading Factor in Injured Rats. I. T. Zeckwer.—p. 356.
 Histologic Aspects of Skin in Late Stages of Trench Foot. M. Block.—p. 360.
 *Pathologic Significance of Ductus Arteriosus: Its Relation to Process of Arteriosclerosis. L. S. Blumenthal.—p. 372.
 Mechanisms of Abnormal Development: I. Causes of Abnormal Development in Embryo. P. Gruenwald.—p. 398.

Pathogenicity of Bagasse.—Bagasse is sugar cane from which the sugar content has been extracted. This material is stored in the open for months and even years; then it is broken and processed into building and insulating boards. Workers breaking bagasse sometimes acquire a respiratory disease characterized by cough, dyspnea, occasional hemoptysis, night sweats, chills and intermittent low fever. Roentgenologic examination of the chest shows miliary mottling throughout both lungs. Most of the patients recover after prolonged illness. Gerstl and his associates report results of studies undertaken on rabbits and guinea pigs to determine the pathogenic properties of bagasse fibers and of the microbial contents of representative suspensions. The possibility that hypersensitivity may play a role was also explored. Intravenous, intratracheal and intracutaneous tests were made. Final interpretation of these experiments has to be postponed until more information concerning the pathogenicity of the micro-organisms and of the fibers will be available. They found that bagasse fiber itself is a rather inert material, that the acute inflammatory process is due to micro-organisms, probably fungi, attached to the bagasse, and that the lesions never resemble those of silicosis.

Ductus Arteriosus and Arteriosclerosis.—The 175 post-mortem specimens on which this report by Blumenthal is based were obtained from fetuses and from persons of various ages. The ductus arteriosus or the ligamentum arteriosum arteriae pulmonalis was removed intact, fixed in solution of formaldehyde U. S. P., sectioned, and stained with hematoxylin and eosin. Many sections were also stained with the Van Gieson or with the elastin H stains to demonstrate more clearly the elastic, muscular and connective tissues. On the basis of the observations it is concluded that the ductus arteriosus is a true muscular organ which on stimulation is capable of contracting strongly enough to obliterate its lumen. The stimulation is apparently the increase of the oxygen saturation of the arterial blood brought about by the onset of respiration in the newborn infant. After the contraction has been maintained for several days, muscle tissue is replaced by tissue of a lower order of specialization. In some cases the replacement is slow and necrosis does not occur; however, in others rapid degeneration with necrosis and calcification takes place. The cause of this tissue replacement and degeneration appears to be relative anoxemia of the wall of the ductus brought about by contraction

of the muscle. This contraction narrows the lumen, compresses the vasa vasorum and thus decreases the blood supply of the vessel wall. These tissue changes occurring in the ductus arteriosus as the result of anoxemia seem to be similar to those observed by Hueper in arteriosclerosis. Anoxemia plays a large part in arteriosclerotic processes and may possibly be the fundamental mechanism through which the various causal agents bring about arteriosclerotic changes.

Arizona Medicine, Phoenix

4:1-104 (Nov.) 1947

- Abbreviated History of Cancer. E. P. Palmer. p. 25.
Incidence of Certain Diseases Among Navajos. C. G. Salsburg.—p. 29.
Osteodystrophia Fibrosa. F. L. Harcourt.—p. 32.
Surgery in Congenital Malformations of Heart and Great Vessels. W. S. Conklin and E. Watkins Jr.—p. 38.
Virus Hepatitis. J. Bank.—p. 44.
Acute Infections of Skin. G. K. Rogers.—p. 47.
Effect of Time of Heating Serums at 56 C. on Kline Test. R. A. Greene and E. L. Breazale.—p. 51.
Problems of Rural Enrollment—Some Suggested Solutions. L. S. Klein schmidt.—p. 53.

Blood, New York

2:505-608 (Nov.) 1947

- Hemophilia: Report of Mechanism of Development and Action of Anti-coagulant in 2 Cases. C. G. Craddock Jr. and J. S. Lawrence.—p. 505.
*Thrombocytic Acroangiothrombosis (Platelet Thrombosis of Capillaries, Arterioles and Venules). P. J. Fitzgerald, O. Auerbach and E. Frame.—p. 519.
*Thrombotic Thrombocytopenic Purpura: Hemorrhagic Diathesis with Generalized Platelet Thromboses. K. Singer, F. P. Bornstein and S. A. Wile.—p. 542.
Chemotherapy of Multiple Myeloma: Use of Antimony: Preliminary Report. M. A. Rubinstein.—p. 555.
Influence of Nitrogen Mustard on Mycosis Fungoides: Observations Relating Its Effect to Reticuloendothelial System. H. H. Henstell, J. N. Tober and B. A. Newman.—p. 564.
Lecithin and Erythrocyte Factor in Blood Sedimentation Phenomenon. J. S. Hirschboeck.—p. 578.

Thrombocytic Acroangiothrombosis.—Fitzgerald and his co-workers report 3 cases of platelet thrombosis of the capillaries, arterioles and venules in 2 white men aged 34 and 24, respectively, and in 1 Negro aged 27. Death occurred in the first patient five weeks from the onset of the patient's illness; the second patient died ten months after the onset of urticaria and vague generalized complaints and one week after acute symptoms appeared. The third patient died one month after the onset of slight joint pains and two weeks after an acute episode with vomiting, a macular rash over the face and neck, red urine and epistaxis following the administration of a sulfonamide compound. Necropsy was performed in all the cases. The pathologic data, clinical aspects and hematologic studies in these 3 cases and in 9 previously reported cases are discussed. It is believed that there exists a definite disease syndrome characterized clinically by fever, decided anemia, purpura; thrombocytopenia, involvement of the central nervous system and progressive fatal course of a few weeks' duration. •Microscopically, the presence of platelet thrombi in the capillaries, arterioles and venules is pathognomonic. The disease can be definitely differentiated from idiopathic thrombocytopenic purpura only by microscopic demonstration of platelet thrombi. Diagnosis of the disease can be made by bone marrow biopsy or by skin biopsy. If a case is diagnosed and the patient does not respond to conservative treatment, splenectomy should be considered. Spleens removed for thrombopenic diseases should be examined for platelet thrombi. Proper evaluation of splenectomy in this disease would be aided by follow-up study of cases showing platelet thrombi. The term "thrombocytic acroangiothrombosis" is suggested for this disease.

Thrombotic Thrombocytopenic Purpura.—Singer and his co-workers report 1 case of thrombopenic purpura associated with multiple platelet thrombi in a white girl aged 11, who died three weeks after the onset of the disease. Thrombotic thrombocytopenic purpura is the name proposed for this rare but well defined disorder which manifests itself clinically as an acute febrile disease and which is characterized by petechiae and ecchymoses, thrombopenia, prolonged bleeding time and poor clot retraction; by a severe anemia out of proportion to any observed blood loss; by mild acholuric jaundice, hepato-

splenomegaly; by bizarre and intermittent mental and neurologic symptoms and signs, and by transient leukemoid reaction in the peripheral blood. This clinical picture must be correlated with a remarkable microscopic pattern, namely, the presence of myriads of platelet thrombi in the small arterioles and capillaries of almost all organs of the body. Eleven such cases have been reported in the literature. Differential diagnosis from aplastic anemias of the idiopathic or of the symptomatic type, from diseases with invasion of the bone marrow by foreign cells, from Werlhof's disease (thrombopenic purpura), from allergic purpura and from infectious or toxic thrombopenic purpura is discussed. It is emphasized that if the physician is familiar with this rare syndrome a correct clinical diagnosis may become readily possible.

Bulletin of Johns Hopkins Hospital, Baltimore

81:295-366 (Nov.) 1947

- *Vivax Relapse Rates Following Continued Atabrine Suppressive Medication: Observations on Malaria in an Infantry Regiment. B. M. Baker and D. Platt.—p. 295.
Influence of Hypervitaminosis A on Bone Growth. T. E. Van Metre Jr.—p. 305.
Experimental Anaphylactic Lesions of Coronary Arteries of "Sclerotic" Type, Commonly Associated with Rheumatic Fever and Disseminated Lupus Erythematosus. A. R. Rich and J. E. Gregory.—p. 312.
Observations on Epidemic of Influenza B Occurring at Johns Hopkins Hospital in November-December, 1945. T. G. Ward and G. R. Leymaster.—p. 325.
Unusual Pathogenicity of Pasteurella Multocida Isolated from Throats of Common Wild Rats. G. J. Schipper.—p. 333.

Quinacrine Suppressive Medication.—Baker and Platt report that the 147th Infantry Regiment served on various islands of the Pacific from the first half of 1942 to September 1945. A period of heavy exposure to malaria was followed first by six months' withdrawal of suppressive medication, then by eighteen months of well-controlled suppressive quinacrinization, with little or no fresh exposure, and finally by terminal dequinacrinization. Previous observations of the same troops proved that it was not safe to stop quinacrine for at least six months after exposure. It is generally accepted that four weeks of suppressive quinacrine medication following the acquisition of infection caused by *Plasmodium falciparum* prevents all further clinical activity. It appears from these observations that suppressive quinacrine medication for eighteen months after significant exposure exerts a comparable effect on some but not all cases of infection due to *Plasmodium vivax*. This confirms the general belief that heavily seeded troops should be taken off suppressive medication cautiously. If the relapse characteristics of the strains involved resemble those of Guadalcanal strains, troops should not be taken off for at least six months. From then on suppressive medication should be withdrawn only from sample fractions to obtain some indication of the remaining relapse latencies. After two years it is probably safe to discontinue the suppressive drug program for all troops at the same time.

Delaware State Medical Journal, Wilmington

19:189-208 (Oct.) 1947

- Problem of Deafness. J. E. Marvil.—p. 189.
Uretero-Intestinal Anastomosis with Total Cystectomy in Vesical Carcinoma. B. S. Vallett.—p. 194.
Spontaneous Hemopneumothorax: Case Report. L. Harrington Jr. and R. W. Frelick.—p. 197.
Report of a Case of Interstitial Pregnancy. O. N. Stern.—p. 201.

19:209-228 (Nov.) 1947

- *Diagnosis of Bulbar Poliomyelitis. G. J. Boines.—p. 209.
Diabetes Mellitus and Cirrhosis of Liver: Case Report. E. M. J. Bohan.—p. 212.
Biliary Surgery. G. S. Serino.—p. 216.
Use of "Iso-Par" Ointment in Treatment of Otitis Externa. W. T. Reardon.—p. 220.

Diagnosis of Bulbar Poliomyelitis.—According to Boines, partial or complete involvement of any of the cranial nerve nuclei in poliomyelitis is referred to as the bulbar form. The cranial nerves most frequently involved are the eleventh, the tenth, the ninth and the seventh. A table which lists the distribution of paralysis in 90 paralytic cases indicates that the lower extremities head the list in being the most susceptible part of the anatomy. The upper extremity is second, and the

sternomastoid is third. Paralysis of swallowing and speech is exceedingly frequent in the bulbar type. Of the 90 paralytic cases, 67 represented spinal and 23 bulbar involvements. There were 8 deaths among the 23 patients with bulbar poliomyelitis. The spinal fluid usually shows pleocytosis in the bulbar cases, but otherwise laboratory methods are of little value in the diagnosis. Early thorough examination of the muscles supplied by the cranial nerves is most important for the diagnosis. The rapid development of the symptoms in bulbar cases makes early hospitalization important. This may make it possible to save the patient with special nursing care and treatment.

Journal of Bone and Joint Surgery, Boston

29:839-1152 (Oct.) 1947. Partial Index

- Arthrodesis of Elbow: Preliminary Report of New Operation. M. Gellman.—p. 850.
Fusion of Hip in Children: Chandler Method. C. N. Pease.—p. 874.
Tuberculosis of Hip in Children: Certain Roentgenographic Manifestations, Secondary Changes in Extremity, and Suggestions for Therapy. H. R. McCarroll and R. D. Heath.—p. 889.
Idiopathic Scoliosis: Method of Correction. G. E. Thomas.—p. 907.
*Osteoid Osteoma: Review of Literature and Report of 30 Cases. Mary S. Sherman.—p. 918.
*Chondromalacia Patellae. J. Bronitsky.—p. 931.
Treatment of Ununited Fractures by Onlay Bone Grafts Without Screw or Tie Fixation and Without Breaking Down of Fibrous Union. D. B. Phemister.—p. 946.
*Internal Fixation of Bone and Neurorrhaphy: Combined Lesions of Radial Nerves and Humerus Fractures. W. K. Massie and A. Ecker.—p. 977.
Transfer of Wrist Extensor Muscles to Restore or Reinforce Flexion Power of Fingers and Opposition of Thumb. G. S. Phalen and R. C. Miller.—p. 993.
Transposition of Fingers in Severe Injuries of Hand. W. C. Graham, J. B. Brown, B. Cannon and D. C. Riordan.—p. 998.
High Geometric Osteotomy, with Rotation and Bone Graft, for Ununited Fractures of Neck of Femur: Preliminary Report. J. A. Dickson.—p. 1005.
Backward Displacement of Fifth Lumbar Vertebra in Degenerative Disk Disease: Significance of Difference in Anteroposterior Diameters of Fifth Lumbar and First Sacral Vertebrae. G. H. Fletcher.—p. 1019.
Peripheral Disease of Poliomyelitis. J. F. Pohl.—p. 1027.
Fascial Repair for Poliomyelitic Paralysis of Abdominal Wall in Adults. G. T. Wallace and W. J. West.—p. 1031.
Transposition of Anterior Tibial Tendon in Treatment of Recurrent Congenital Club-Foot. G. J. Garceau and K. R. Manning.—p. 1044.
Interochanteric Fractures of Femur: Survey of Treatment in Traction and by Internal Fixation. M. Cleveland, D. M. Bosworth and F. R. Thompson.—p. 1049.
Wedge Osteotomy of Spine with Bilateral Intervertebral Foraminotomy: Correction of Flexion Deformity in 5 Cases of Ankylosing Arthritis of Spine. H. Briggs, S. Keats and P. T. Schlesinger.—p. 1075.
Diagnosis and Treatment of Tardy Paralysis of Ulnar Nerve: Based on Study of 100 Cases. J. R. Gay and J. G. Love.—p. 1087.

Osteoid Osteoma.—Sherman says that although instances of osteoid osteoma had been reported under other names, it received little attention until Jaffe published an account of this lesion in 1935. The disease occurs mostly in adolescents and young adults. It is nearly twice as frequent in males as in females. The chief physical manifestation is that of tenderness. Roentgenographic examination of a mature lesion reveals that the active nidus is usually a small round or oval area of reduced density. About this nidus a thick, dense shadow of sclerotic regional bone is almost always present. The author presents 5 case histories which illustrate most of the characteristics of this lesion. Most authors are in agreement with Jaffe that it is a distinct entity. There exists, however, no such agreement as to whether the lesion is a benign neoplasm, as Jaffe contends. Brown and Ghormley, on the basis of 24 cases which they considered examples of the condition described by Jaffe, consider such lesions as chronic bone abscesses. Sherman admits that photomicrographs of material removed from 10 of the patients of Brown and Ghormley justify this conclusion, but she does not regard as reasonable the contention of these authors that all osteoid osteomas are solitary chronic bone abscesses. She believes that the weight of evidence is clearly against infection as the etiologic agent. The patients never have fever, leukocytosis or other systemic manifestations. When swelling is present, the area is only occasionally warm and there is no redness. The lesions are always solitary and never recur after complete excision. The wounds invariably heal after operation by first intention. The author agrees with Jaffe that osteoid osteoma is not of infectious origin but is probably best interpreted as a benign tumor.

Chondromalacia Patellae.—The study by Bronitsky is based on 29 cases in which degeneration of the patellar cartilage was verified at operation. Chondromalacia of the patella can be a disabling disease in a young, otherwise healthy person. In a patient in his early twenties with a history of chronic knee discomfort which does not respond to conservative treatment and which includes weakness, tendency to locking, occasional swelling of the knee and pain, especially on the medial side of the joint, the diagnosis of chondromalacia of the patella must be considered. If patellar crepitation or grating is present, this diagnosis can be made with greater certainty. Patellarplasty or chondrectomy, combined with some form of covering for the articular surface, gave consistently poor results. The surgery of choice is either a partial chondrectomy or patellectomy. Chondrectomy gave good results in 75 per cent and excision of the patella in all cases except one, where a primary synovitis was present. When synovitis is present with patellar chondromalacia, synovectomy is not required, since this condition usually clears up after excision of the patella. The decision as to the type of operation to be performed will have to be made frequently after the knee joint has been exposed. Chondrectomy should be reserved for cases in which the patellar cartilage and surrounding soft tissue are involved. In cases in which there is a severe involvement of the synovial tissue, patellectomy will give best results. Free bodies and torn menisci should be removed. The youngest patient in whom a patellectomy was performed was 13 years of age; the oldest patient was 36. The functional results were always good.

Internal Fixation of Bone and Neurorrhaphy.—Massie and Ecker had under their care in 1945 more than 200 cases of severe nerve lesions associated with fractures of the long bones. This group included 84 cases of fracture of the humerus in which exploration of the radial nerve was carried out within a few weeks of injury. In all except 2 either neurolysis or satisfactory anastomosis was performed. Of the total group of 84 cases, 41 required neurolysis only; 35 required nerve suture only, and 8 required internal fixation of the bone with shortening and nerve suture. Each of the 8 cases presented a lesion of the radial nerve associated with a compound fracture of the humerus. This report is confined to an analysis of the 8 cases in which treatment was by neurorrhaphy and bone shortening within sixty days of the injury on the average. Bony union was complete in all cases. Nerve regeneration was progressing satisfactorily but was complete in only 2 at the time the patients were last seen. The importance of early and adequate galvanic stimulation of paralyzed muscles is stressed. No ill effects are demonstrable from shortening of the humerus up to one-fifth of its length. Early suture of the nerve is of paramount importance. When suture necessitates prohibitive tension on the nerve, either at operation or during postoperative stretching, concomitant shortening of the bone in the arm is feasible. This is considered preferable to tendon transplantation in the forearm at a later date.

Journal Industrial Hygiene & Toxicology, Baltimore

29:359-414 (Nov.) 1947

- Treatment of Decompression Sickness: Analysis of 113 Cases. O. E. Van Der Aue, G. J. Duffner and A. R. Behnke.—p. 359.
Control of Lead Hazard in Brass Foundry Industry. L. E. Hamlin and H. J. Weber.—p. 367.
Mercury Exposures in Dry Battery Manufacture. C. R. Williams, M. Eisenbud and S. E. Pihl.—p. 378.
Toxicity and Narcotic Action of Mono-Chloro-Mono-Bromo-Methane with Special Reference to Inorganic and Volatile Bromide in Blood, Urine and Brain. J. L. Svirebely, B. Highman, W. C. Alford and W. F. von Oettingen.—p. 382.
Toxicity of Polyethylene Glycols by Repeated Epidermal Applications. F. P. Luduena, Jean K. Fellows, G. L. Laqueur and R. L. Driver.—p. 390.
Tellurium: II. Effect of Ascorbic Acid on Tellurium Breath. R. H. De Meio.—p. 393.
Improved Method for Determination of Volatile Halogenated Hydrocarbons in Blood and Other Biologic Materials. W. C. Alford.—p. 396.
Improvement of the M. S. A. Electrostatic Precipitator. G. D. Clayton.—p. 400.
Study of Efficiency of Methods for Obtaining Vapor Samples in Air. H. L. Andrews and Dorothy C. Peterson.—p. 403.
Calibration of Field Equipment from Air Vapor Mixtures in Five Gallon Bottle. F. M. Stead and G. J. Taylor.—p. 408.

Journal of Investigative Dermatology, Baltimore
9:163-218 (Oct.) 1947

- Inhibition of Erythema Solare in Normal Subject with Pyribenzamine: Preliminary Report. A. Kuntin, W. Bierman and R. Yontef.—p. 163.
- Immunologic Relationships of Antibiotics and Trichophytin: Clinical Observations and Animal Experiments. S. M. Peck and S. Siegal.—p. 165.
- Responsiveness of Human Skin to Histamine Introduced by Electrophoretic Technique. J. Sherman and E. H. Walzer.—p. 187.
- Use of Nitrogen Mustard in Treatment of Mycosis Fungoides. R. R. Kierland, C. H. Watkins and C. C. Shullenberger.—p. 195.
- Eczematous Cross-Hypersensitivity to Azoxyes in Nylon Stockings and to Paraphenylenediamine. Sonia Dobkevitch and R. L. Baer.—p. 203.
- Philological Note on a Certain Classical Suffix Commonly Used in Dermatologic and General Medical Nomenclature. M. Leider and M. Rosenblum.—p. 213.

Nitrogen Mustard in Mycosis Fungoides.—Kierland and his associates report 6 patients with mycosis fungoides treated with nitrogen mustard, methyl-bis(beta-chloroethyl)amine hydrochloride. In 4 of these patients the condition had become resistant to roentgen therapy. One patient died of apparently unrelated causes shortly after a course of nitrogen mustard was given. The general condition and the cutaneous lesions of the other 5 patients improved after treatment. Three patients have had two courses of the drug. A remission of more than four months' duration has been obtained in 1 patient. Reactions were frequent, acute and occasionally severe; but in all cases it was possible to complete a course of therapy without serious ill effects. The response of the individual lesions in the same person and of lesions of different persons to treatment with this agent vary greatly. The authors conclude that methyl-bis(beta-chloroethyl)amine hydrochloride in the treatment of mycosis fungoides is an adjunct to previously recognized therapeutic measures and is of particular value when roentgen therapy is no longer of benefit.

Journal of Pediatrics, St. Louis
31:369-484 (Oct.) 1947

- New Treatment for Diaper Rash: Preliminary Report. R. A. Benson, L. B. Slobody, Lois Lillick and others.—p. 369.
- Subcutaneous Administration of Sodium Sulfadiazine. G. B. Forbes, G. Donnell and J. C. Herweg.—p. 375.
- Rheumatic Fever Recurrences in Children Without Sulfonamide Prophylaxis: Evaluation of Environmental Factors. R. L. Jackson, Helen G. Kelly, Cecelia H. Rohret and Julia M. Duane.—p. 390.
- Review of Subject of Congenital Hemihypertrophy and Complete Case Report. J. Ward and H. H. Lerner.—p. 403.
- Factors Which Influence Duration of Breast Feeding. Mildred A. Norval.—p. 415.
- Portal Cirrhosis of Liver: Case Report with Discussion of Problems. W. M. Block.—p. 420.
- Dental Caries Experience in Postwar Italy (1945): II. Among Teen-Age Children in Naples. M. Massler and I. Schour.—p. 431.
- Rabies: Case Report with Notes on Isolation of Virus from Saliva. C. E. Duffy, P. V. Woolley Jr. and W. S. Nolting.—p. 440.
- Primary Etiology of Specific Language Disabilities. R. S. Eustis.—p. 448.

Subcutaneous Administration of Sodium Sulfadiazine.—Forbes and his co-workers say that because the gastrointestinal tract of infants is not suited for the absorption of sulfonamide drugs the subcutaneous route has been used since 1942 at the St. Louis Children's Hospital. Adult patients do not absorb sodium sulfadiazine readily from the subcutaneous tissues, but for infants and children administration by the subcutaneous route constitutes a satisfactory method. Blood sulfadiazine concentrations of any desired magnitude can be quickly achieved and easily maintained by this method. The rate of diffusion of sulfadiazine from the plasma to the cerebrospinal fluid in patients with meningeal infection is somewhat slower following subcutaneous administration in comparison to the intravenous method. This lag is not of sufficient magnitude to contraindicate use of the subcutaneous route for the great majority of patients with bacterial meningitis. In addition to adequate chemotherapy, hydration of the patient and alkalization of the urine may be accomplished concurrently via the subcutaneous route by proper adjustment of the volume of the solution and its content of sodium lactate.

Rheumatic Fever Recurrences.—Jackson and his associates attempted to determine the recurrence rate of a group of rheumatic subjects who have received special attention to improve their diets and level of environmental care, but who have not received sulfonamide drugs to prevent intercurrent infections. They hoped to evaluate the relation of environmental factors to the course of the disease and to learn whether a high level of general care is sufficient to protect the children from recurrences, or if some children also should receive chemotherapeutic agents for prophylaxis. The 266 patients studied by the authors were under observation nearly nine hundred person-years. The major recurrence rate, although low, was higher than the rate for patients given sulfonamide prophylaxis. It was concluded that if the disease is definitely inactive an excellent diet and wholesome living conditions will practically eliminate the chances of a recurrence with carditis, and that sulfonamide prophylaxis is indicated for children who have recovered from rheumatic fever but have had carditis and are forced to live in an environment which does not provide a good diet and at least a fair level of general care.

Rabies.—The case of rabies reported by Duffy and his associates concerned a boy aged 13 months, who was hospitalized because of fever, refusal of food, irritability, restlessness and disorientation, all of twenty-four hours' duration. He had been well previously. The infant died on the fourth day after the development of symptoms. Samples of spinal fluid, blood and saliva were obtained a week before death. Diagnosis of rabies was established by isolating rabies virus from the saliva. The untreated saliva when injected intracerebrally into mice killed the animals within twenty-four hours. The same saliva when mixed with penicillin and inoculated intracerebrally permitted 3 of the 7 mice inoculated to survive long enough that the virus could be recovered. The agent isolated from the saliva was known to be rabies virus by the demonstration of Negri bodies in the brains of mice and by neutralization tests. The virus was not isolated from the cerebrospinal fluid or blood. This case illustrates how confusing the diagnosis of rabies can be when no clearcut history of exposure is obtained.

Medical Annals of District of Columbia, Washington
16:533-594 (Oct.) 1947

- Some Clinical Observations on Use of Curare in Anesthesia. E. B. Macon and W. E. Bageant.—p. 533.
- Psychiatric Aspects of Epilepsy. H. Stevens.—p. 539.
- Pollen Counts—Their Proper Place in Hay Fever. A. Seltzer.—p. 542.
- Acquired Syphilitic Osteomyelitis: Report of Case Treated with Penicillin and Review of Literature. W. S. Miller.—p. 543.
- Perforating Wound of Orbit: Report of Case. T. R. Rees.—p. 548.

16:595-650 (Nov.) 1947

- Clinical Significance of Gas Shadows in X-Ray Examinations of Compound Wounds. E. J. McDonald.—p. 595.
- Clinical Evaluation of Newer Liver Function Tests. L. J. Thomas.—p. 599.
- Unnecessary Surgery. A. Horwitz.—p. 605.
- Extragenital Chancere. M. M. Robinson.—p. 609.
- Group Psychotherapy: Remarks on Its Basis and Application. J. Abraham.—p. 612.

Gas Shadows in Wounds.—McDonald reports on 146 casualties from a severe explosion examined with roentgen rays. Twenty-one of those with compound wounds had evidence of gas shadows in their soft tissues. Such shadows in soft tissues can be produced (1) by the introduction of air with a foreign body, (2) by enclosing air at the operative closure of skin flaps and (3) by anaerobic clostridia. In this series there was not a single case of proved infection by pathogenic anaerobes. A roentgenologic differential diagnosis between a pathogenic and a saprophytic gas-forming bacterium cannot be offered, except that the presence of air in the first several hours is more likely to be mechanical; its rapid extension and linear spread in the muscle planes suggest pathogenic infection. The vast majority of gas shadows in roentgenograms probably represent benign saprophytic or nonpathogenic contamination. The patients would recover regardless of the therapeutic use of roentgen rays, gas serum or possibly even sulfonamide compounds. Too often the mere presence of clostridia, even pathogenic, has been taken to prove the imminence of a fulminating gas infection. Clostridial contamination occurs in 20 to 30 per cent of war wounds, and yet in only 0.4 per cent does gas gangrene develop. In addition, the soft tissues in about 15 per cent of all compound wounds show roentgenologic evidence of gas; at follow-up these shadows appear to be benign and do not represent true gas infection. The author thinks that the significance of gas in wounds

New Orleans Medical and Surgical Journal

100:141-202 (Oct.) 1947

- Radiotherapy for Gynecologic Cancer. M. Garcia and J. V. Schlosser.—p. 141.
 Infectious Hepatitis and Homologous Serum Jaundice: Same or Different Diseases. C. N. Haggard.—p. 148.
 Needle Biopsy of Liver. W. D. Davis Jr.—p. 159.
 Etiology of Peptic Ulcer. P. B. Daron.—p. 163.

100:203-252 (Nov.) 1947

- Circumvallate Placenta. A. B. Hunt, R. D. Mussey and J. E. Faber.—p. 203.
 Chronic Pneumonias. S. Jacobs.—p. 207.
 Drug Reactions and Their Treatment, with Special Reference to Use of BAL in Heavy Metal Poisoning. C. B. Kennedy and V. M. Henington.—p. 209.
 Chemotherapy of Leprosy. H. Gray.—p. 218.

Proc. Soc. Exper. Biol. & Med., Utica, N. Y.

66:1-288 (Oct.) 1947. Partial Index

- Creeping Eruption Caused by Larvae of Cattle Hookworm: *Bunostomum phlebotomum*. R. L. Mayhew.—p. 12.
 Urinary Excretion of Radioactive Iodine, I^{131} , in Case of Severe Hyperthyroidism. K. W. Stenstrom and J. F. Marvin.—p. 47.
 Tyrosine Tolerance Test in Pregnancy and Puerperium. E. W. Page.—p. 79.
 Hyperglycemia Induced by Certain Insulin Preparations. N. S. Olsen and J. R. Klein.—p. 86.
 *Widespread Distribution of Poliomyelitis in Households Attacked by the Disease. H. A. Wenner and W. A. Tanner.—p. 92.
 Effect of Hypothyroidism and Hyperthyroidism on Mammalian Skeletal Muscle. R. Diaz-Guerrero, J. D. Thomson and H. M. Hines.—p. 95.
 Inhibition of Mumps Virus Multiplication by Polysaccharide. H. S. Ginsberg, W. F. Goebel and F. L. Horsfall Jr.—p. 99.
 Excretion of Poliomyelitis Virus. H. K. Faber, Rosalie J. Silverberg and L. Dong.—p. 103.
 Attempts to Produce Acute Cardiac Failure by Posterior Pituitary Extracts. J. B. Nolasco and R. Kohrman.—p. 108.
 Clotting Defect in Hemophilia: Deficiency in Plasma Factor Required for Platelet Utilization. K. M. Brinkhous.—p. 117.
 *Circulating Antibodies in Vitamin Deficiency States: I, Pyridoxin, Riboflavin and Pantothenic Acid Deficiencies. A. E. Axelrod, B. B. Carter, R. H. McCoy and R. Geisinger.—p. 137.
 Role of Vagus Nerve in Experimental Cinchophen Ulcer. J. R. Hilsabeck and F. C. Hill.—p. 155.
 *Uneven Distribution of Glycogen in Liver. G. Gomori and M. G. Goldner.—p. 163.
 *Influence of Oral Saccharin on Blood Sugar. E. Kun and I. Horvath.—p. 175.
 Catheterization of Coronary Sinus and Middle Cardiac Vein in Man. R. J. Bing, L. D. Vandam, F. Gregoire and others.—p. 239.
 BAL Inhibition of Mercurial Diuresis in Congestive Heart Failure. R. M. Sussman and J. A. Schack.—p. 247.

Distribution of Poliomyelitis Virus.—Wenner and Tanner studied 20 persons in four households in which poliomyelitis had appeared for the distribution of the virus. They found that 16 had poliomyelitis virus in their intestinal discharges, and among these 16, 7 had virus in the oropharynx. Of 12 children in these families, each had poliomyelitis virus in the stool specimen; 5 had virus in the oropharynx. Of the 8 adults 4 had poliomyelitis virus in stool samples, and in 2 of these 4 the virus was detected in the throat. Poliomyelitis virus was not found in the remaining 4 parents. The history of onset of illness suggested that infection occurred in these households as a result of exposure at a common source.

Antibodies in Vitamin Deficiency States.—Axelrod and his associates found severe impairment of antibody response in pantothenic acid and pyridoxin-deficient rats. Variable but low titers were observed in the riboflavin-deficient groups. Consistently high titers were noted in both the inanition controls and the ad libitum-fed animals.

Uneven Distribution of Glycogen in Liver.—Gomori and Goldner stress that great caution is warranted in judging the metabolic state of the liver on the basis of the glycogen content of biopsies, inasmuch as variations exceeding several hundred per cent may be observed in simultaneous biopsies taken from the same lobe of the rabbit's liver.

Influence of Oral Saccharin on Blood Sugar.—Kun and Horvath gave saccharin (sodium salt of *o*-sulfobenzoic acid imide) to human subjects in doses of 0.05 Gm. in 80 cc. of water. They found that this dose caused a decrease of 12 to 16 per cent in the blood sugar level of normal persons. Water alone had no significant influence. The decrease of blood sugar was not proportional to the dosage of saccharin. Administration of the

saccharin in four portions during a forty minute period increased the duration of hypoglycemia. Thus it seems that saccharin with its intensely sweet taste can cause a decrease in blood sugar, presumably through the reflex liberation of insulin.

Southern Medical Journal, Birmingham, Ala.

40:881-964 (Nov.) 1947

- Treatment of Acute Primary Atypical Pneumonia, Etiology Unknown. D. Greer.—p. 881.
 Giant Uteral Stone in 3 Year Old Child. H. W. McKay and H. H. Baird.—p. 891.
 Case Report of Mechanical Right Heart Failure from Extension of Undiagnosed Bronchiogenic Carcinoma. T. Levy.—p. 892.
 Modified Ligation Operation for Obliterating Varicose Veins. N. A. Schneider.—p. 896.
 Dual Grafts for Nonunion of Clavicle. W. C. Basom, L. W. Breck and J. R. Herz.—p. 898.
 Poliomyelitis Preparedness. G. D. Wilson.—p. 899.
 Tularemia: Report of Unusual Case Treated with Streptomycin. R. O. Noojin and P. W. Burleson.—p. 903.
 *Abdominal Pregnancy: Birth by Rectum. W. W. Brown Jr. and C. Rucker.—p. 905.
 Cystic Teratoma (Dermoid Cyst) of Ovary: Study of 52 Cases. W. S. Quinlan and I. R. St. Hill.—p. 908.
 Cuban Concept of Cephalopelvic Disproportion Syndrome and Its Treatment. H. Valle Pineda and A. Sardinas Ramirez.—p. 914.
 Obstetric and Gynecologic Mortality at Parkland Hospital 1944, 1945 and 1946. W. F. Mengert, R. J. Rimmer and M. L. Britton.—p. 920.
 New Micro-Iron Method for Determination of Hemoglobin in Blood from One Drop of Fingert Blood. J. T. Peters.—p. 924.
 Early Reparatative Treatment of Compound Fractures. W. McD. Ewing.—p. 926.

Birth by Rectum in Abdominal Pregnancy.—Brown and Rucker report a woman, aged 25, in whom pregnancy had presumably begun with tubal implantation some time after August 1945. Tubal abortion with minimal internal bleeding and secondary placental implantation occurred before the appearance of vaginal spotting Nov. 15, 1945. The pregnancy prospered for a time but succumbed March 15, 1946, from lack of blood supply or trophoblastic invasion of the large bowel, or both. Contamination of the amniotic sac and peritonitis from bacteria present in the large bowel ensued. Laparotomy was contraindicated after the onset of peritonitis. During the entire forty-three day febrile period the amniotic sac was grossly infected, since it formed a communicating diverticulum with the rectum. The points of interest presented by this patient included: (1) the length of time between development of the rectoamniotic fistula and passage of the first fetal bones (nearly two months); (2) the onset of recovery despite presence of the fistula; (3) spontaneous closure of the fistula after the amniotic sac content was discharged, and (4) complete healing of the internal genitalia without obvious residual scarring.

Surgery, St. Louis

22:729-888 (Nov.) 1947

- Surgical Cure of Innominate Aneurysm: Report of Case with Comments on Applicability of Surgical Measures. H. B. Shumacker Jr.—p. 729.
 *Use of Tetraethylammonium Chloride in Treatment of Experimental Acute Arterial Insufficiency. F. W. Cooper Jr., R. L. Robertson and E. W. Dennis.—p. 740.
 *Action of Heparin on Experimental Venous Thrombosis. L. Loewe, E. Hirsch and D. M. Grayzel.—p. 746.
 Extensive Blue Nevus of Jadassohn-Tièche: Report of Case. Bette V. Cyslaw, R. K. Ghormley and H. Montgomery.—p. 761.
 Benign Intestinal Tumors of Vascular Origin. J. A. Lazarus and M. S. Marks.—p. 766.
 War Injuries of Chest: Report of a Series of 678 Cases. J. M. Snyder and F. Tropea Jr.—p. 780.
 *Endometriosis of Intestinal Tract. M. R. Sutler.—p. 801.
 Method for Dissolution of Common Duct Stones Remaining After Operation. B. O. C. Pribram.—p. 806.
 Brackett Operation for Ununited Fracture of Neck of Femur. J. C. Ivins and R. K. Ghormley.—p. 819.
 Prolonged Spinal Anesthesia for Operations on Hip and Lower Extremity. J. E. Ruben.—p. 826.
 Lymph Leakage (Lymphorrhea): Complication of Saphenous Vein Ligation, with Suggestions for Treatment. F. C. Fishback.—p. 834.

Tetraethylammonium Chloride in Arterial Insufficiency.

—The experiments presented by Cooper and his associates were undertaken to determine the efficacy of chemical sympathetic blockage in experimental acute arterial injuries. In 30 adult mongrel dogs the aortic trifurcation was exposed. The terminal aorta was doubly ligated distal to the origin of the inferior mesenteric artery but proximal to the origin of the deep circumflex iliac arteries. Ligatures were placed around the two

external iliac arteries and the common hypogastric trunk. The intervening arterial trunks were excised. The abdominal wound was closed in layers. Nothing further was done in the control group of 10 dogs, the animals being closely observed until the time of death. In the experimental group tetraethylammonium chloride was given intramuscularly in the proportion of 25 mg. per kilogram of body weight as a sterile 10 per cent solution. Similar doses were given every eight hours for three days. The observations indicate that chemical blockage of autonomic ganglions by the tetraethylammonium ion may be of value in acute arterial insufficiency following arterial injury, either as a substitute for other methods of sympathetic interruption or as a preliminary to them.

Heparin in Venous Thrombosis.—Loewe and his associates found that heparin therapy in experimental venous thrombosis in rabbits gave the following results: (1) early clots are completely resolved; (2) growth of the collateral venous circulation is tremendously enhanced, and (3) speed of recanalization after occlusive thrombus formation is accelerated.

Endometriosis of Intestinal Tract.—Sutler says that the recognition that ectopic endometrium may have a wide extragenital spread has made endometriosis a condition of general medical interest. Among 140,716 histologic diagnoses made by the pathology department of the University of Michigan during a ten year period, endometriosis was noted in 848 patients (0.60 per cent). The author is convinced that this histologically ascertained incidence is considerably lower than the actual incidence. It has been estimated that endometriosis exists in 10 to 22 per cent of all patients requiring gynecologic abdominal operations and in 8 to 15 per cent of all women during active menstrual life. The intestinal tract is a highly significant extragenital location for endometriosis. In the material studied this site was involved in 35 patients; the appendix in 25, the ileum in 1, and the rectosigmoid in 9. Cancer may be simulated by endometrial invasion of the intestine. The paucity of pathognomonic signs of endometriosis and its frequent occurrence as a coexistent lesion of lesser importance preclude a satisfactory percentage of correct preoperative diagnoses. Histologic examination will often remain the only certain means of confirming the diagnosis.

Tennessee State Medical Assn. Journal, Nashville

40:319-348 (Oct.) 1947

- Non-Operative Treatment of Acute Hematogenous Osteomyelitis: Preliminary Report. J. J. Killeffer and R. C. Robertson.—p. 319.
- Acute Pulmonary Edema Resulting from Intravenous Saline. J. E. Whiteleather and J. E. Gardner.—p. 326.
- Ringlike Skin Lesions. C. Shaw.—p. 330.
- Analysis of Causes of Globus Hystericus. W. D. Stinson.—p. 332.

40:349-388 (Nov.) 1947

- Industrial Health Problems in the South. E. J. Gaynor.—p. 349.
- Management of Arterial Emboli. J. A. Kirtley Jr.—p. 351.
- School Health Service Recommendations. D. F. Smiley.—p. 358.
- Management of Rectal Prolapse. D. W. Smith.—p. 360.
- Observations in Electric Shock Therapy. G. Rosenberg.—p. 365.
- Resuscitation of Asphyxiated Newborn Infant. H. E. Atherton.—p. 372.

Resuscitation of Asphyxiated Newborn.—Atherton stresses that the primary requirement of the asphyxiated baby is oxygen. In severe asphyxia the larynx and pharynx behave like a collapsed tube, and air forced into the mouth will not penetrate the larynx efficiently. Removal of mucus and other debris from the mouth and pharynx is insufficient, because in most instances the trachea and bronchi are plugged. At the University of Tennessee intratracheal intubation is employed. The index finger is introduced, acting as a guide for a tracheal catheter, which is introduced through the larynx into the trachea. The trachea is then thoroughly aspirated as the catheter is withdrawn. The catheter is reinserted into the trachea, and the finger now makes pressure over the larynx and body of the catheter to occlude any reflux of air when it is blown into the trachea. Artificial respiration is carried out by gently blowing into the catheter at the rate of about twenty times per minute. The effort is continued just as long as there is a heart beat. Respiratory stimulating drugs are used only as adjuncts when the catheter technic does not give satisfactory results.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine, Liverpool

41:165-291 (Sept.) 1947. Partial Index

- Observations on Life Cycle of *Schistosoma Mansoni* in Laboratory, with Discussion on Snail Vectors of *S. Mansoni* and *S. Haematobium*. S. G. Cowper.—p. 173.
- Field Trials with "Gammexane" as Means of Malaria Control by Adult Mosquito Destruction in Sierra Leone. G. Davidson.—p. 178.
- Consumption of Hemoglobin by Malaria Parasites. R. H. Black.—p. 215.
- Infection of Rats by Trypanosomes (*T. Rhodesiense*) Taken from Man Early in Disease. H. Fairbairn.—p. 218.
- Excretion of Stilbamidine and Some Related Compounds in Experimental Animals. J. W. F. Hampton.—p. 226.

British Journal of Experimental Pathology, London

28:309-376 (Oct.) 1947

- Allergen (S) of House Dust: Purification and Chemical Nature of Active Constituents. C. Rimington, D. E. Stillwell and K. Maunsell.—p. 309.
- Id.: Comparison with Products Derived from Moulds. D. E. Stillwell, C. Rimington and K. Maunsell.—p. 325.
- Id.: Diagnosis and Desensitization of Dust-Sensitive Patients with "Crude Dust Antigen." K. Maunsell, E. Whetnall and C. Rimington.—p. 331.
- Serologic Typing of *C. Diphtheriae*. L. F. Hewitt.—p. 338.
- Behavior of Streptococci of Varying Virulence Towards Glutamine. J. H. Hale and H. McIlwain.—p. 346.
- Ascorbic Acid Content of Liver in Pregnant Rats. E. L. Kennaway and M. M. Tipler.—p. 351.
- Production of Diphtheria Toxin by Submerged Culture in Shaking Flasks. F. V. Linggood and E. L. Fenton.—p. 354.
- Gastric Urease. S. Hollan.—p. 365.

Allergens of House Dust.—In the first of their three papers on the allergens of house dust Rimington and his associates show that a procedure has been elaborated for the extraction from house dust and purification of the material giving positive dermal reactions in dust-sensitive persons. Hydrolysis with acid under suitable conditions liberated a reducing sugar identified chromatographically as galactose and a number of simple amino acids. The second report is concerned with a comparison that has been made of the reactions given by allergic subjects to purified house dust antigen, the pooled extracts of twenty-six strains of mold grown in pure culture, the culture fluids obtained from the latter, and also to materials predominantly polysaccharide in character isolated from four species of *Penicillium* and one species of *Calidiariomyces*. Some patients gave positive reactions to both house dust and mold products, others were sensitive only to house dust. No patient was sensitive to molds and insensitive to house dust. Examination of three of the nitrogen-containing polysaccharide materials from molds by chromatography after acid hydrolysis revealed the presence in them of several of the simple amino acids. In this respect they resembled, chemically, the purified antigen from house dust. In summary of the studies described in the third paper the authors say that "crude dust antigen" dilutions of 10^{-5} produced cutaneous reactions by intradermal tests in about 6 per cent of normal subjects and in 70 per cent of persons with allergic symptoms. Allergic symptoms of the respiratory tract seemed to be provoked by a dusty atmosphere in subjects with a threshold reaction to dust in dilutions not less than 10^{-7} . Sensitivity to dust and to other inhalants often occurred together in the same subjects. Among 80 allergic patients, none of those tested was sensitive to feather, cat hair or molds and not to dust. Many patients exhibited sensitivity to the dust antigen but not to molds or any other material tested. Eighteen allergic patients with perennial rhinitis and allied conditions who received a course of injections of dust antigen claimed improvement during treatment. The changes in the nasal mucosa did not return to normal. A decrease of the threshold reaction to dust was obtained during treatment.

British Journal of Industrial Medicine, London

4:141-204 (July) 1947

- Study of Portable Vibrating Tools in Relation to Clinical Effects Which They Produce. J. N. Agate and H. A. Druett.—p. 141.
- Effects of Climatic Extremes. M. Critchley.—p. 164.

British Medical Journal, London

2:719-758 (Nov. 8) 1947

- Peep-Show: New Technic for Pure Tone Audiometry in Young Children. M. R. Dix and C. S. Hallpike.—p. 719.
- Social Surveys: Medical and Psychiatric Aspects. C. P. Blacker.—p. 723.
- Child Bearing and Pulmonary Tuberculosis. C. J. Stewart and F. A. H. Simmonds.—p. 726.
- Appendicitis in the Young Child. H. Williams.—p. 730.
- *Endocyme Fetus in Fiji Infant. R. W. D. Maxwell.—p. 732.
- Health Regulations for Air Travel. R. H. Barrett.—p. 741.

Endocyme Fetus in an Infant.—Maxwell reports the case of an infant aged 4 months with a greatly enlarged abdomen. On palpation the upper two thirds of the abdomen was felt to be occupied by a large firm mass, which on opening of the abdomen was found to be inclosed in a thin-walled sac. When this sac was opened a fetus was disclosed. The weight of the fetus after removal was 1 pound 10 ounces (737 Gm.), and the infant's weight on the day after operation was 8 pounds 4 ounces (3,742 Gm.). The infant made an excellent recovery. Roentgenoscopy of the removed fetus disclosed a rudimentary spine and long bones.

Journal of Physiology, Cambridge

106:379-502 (Oct.) 1947. Partial Index

- Histaminolytic Action of Blood During Pregnancy. G. V. Anrep, G. S. Barsoum and A. Ibrahim.—p. 379.
- Cortical Lipids of Normal and Denervated Suprarenal Gland Under Conditions of Stress. Marthe Vogt.—p. 394.
- Effect of Electrolyte Deficiency on Rate of Conduction in Single Nerve Fiber. B. Katz.—p. 411.
- Estimation of Adrenaline in Normal Rabbit's Blood. G. B. West.—p. 426.
- Inulin, Diodone, Creatinine and Urea Clearances in Newborn Infants. R. F. A. Dean and R. A. McCance.—p. 431.
- Some Factors Affecting Acidity of Urine in Man. M. G. Eggleston.—p. 456.
- Vagal Nerve Fiber Activity Following Multiple Pulmonary Embolism. E. G. Walsh.—p. 466.

Lancet, London

2:677-708 (Nov. 8) 1947

- Physique and Growth of Schoolboys. G. E. Friend and E. R. Bransby.—p. 677.
- Paroxysmal Tachycardias. M. Campbell.—p. 681.
- Pituitary Basophilism: Report of Case. G. A. Penington, R. Kaye-Scott and R. J. Wright-Smith.—p. 684.
- Neuropathy After Stilbamidine: Treatment of Kala-Azar. P. J. Collard and W. H. Hargreaves.—p. 686.
- *Quartan Malaria Transmitted by Blood-Transfusion: Report of Case. K. B. Rogers.—p. 688.

Quartan Malaria Transmitted by Blood Transmission.

—Rogers states that a woman, aged 18, was given an antepartum blood transfusion. About eight weeks after this transfusion malaria developed. Typical Plasmodium malariae were observed in her blood smears. She was treated with quinine and quina-crine. Although the woman received the blood transfusion before delivery, the infant had shown no signs of malaria up to the age of 5 months. The blood donor had never had clinical malaria but had lived five months in a malarious area seven years before. The blood sedimentation rate was not elevated in the carrier of malaria.

New Zealand Medical Journal, Wellington

46:373-472 (Oct.) 1947

- Clinical Study of Congenital Heart Disease. E. H. Roche.—p. 373.
- Diabetes and Pregnancy. W. E. Henley.—p. 386.
- *Possible Fallacies in Present Method of Sputum Examination in Diagnosis of Pulmonary Tuberculosis. L. Kirschner.—p. 398.
- Anticoagulants in Medicine. E. H. Roche.—p. 404.
- Dynamic Postural Drainage: Improved Method in Treatment of Bronchiectasis. C. McDowell.—p. 410.
- Note on Stillbirths and Neo-Natal Deaths. T. R. Ritchie.—p. 412.
- Hutchinson's Syndrome. D. R. Ryder.—p. 415.
- Diagnosis of Fungus Infection: Investigation of 100 Cases. M. J. Marples.—p. 422.
- Recording Continuous Flow Cystometer. H. Gaudin.—p. 428.

Sputum Examination in Diagnosis of Pulmonary Tuberculosis.—The observations reported by Kirschner were made in the bacteriologic department of the Pasteur Institute in Java. He stresses that in patients with minimal lesions and in convalescents a sputum examination that is negative does not exclude the possibility of discharge of tubercle bacilli. In such cases repeated examination is advisable. To avoid this repetition

a rational method of sputum examination, gastric lavage or laryngeal swab is recommended. The method consists of collecting sputum for several days (three, seven or fourteen days, respectively) and using the entire sediment obtained by concentration for microscopic examination as well as for animal inoculation and/or culture. Experience has shown that in this way the chance of detection of tubercle bacilli in a single examination is much greater without further taxing the laboratory. Experiments carried out with artificially infected sputums revealed that the bacilli maintain their viability for at least seven to fourteen days at room temperature in the tropics. The same will apply for the temperate climate with its lower temperature, which preserves much better the viability of all organisms. Modification of the Ziehl-Neelsen staining technic is mentioned, which is technically no more complex than the original method but which facilitates the detection of tubercle bacilli.

Proceedings of Royal Society of Medicine, London

40:681-760 (Oct.) 1947. Partial Index

- Diagnosis and Treatment of Tumors of Nasopharynx. E. D. D. Davis.—p. 707.
- *Painful Disability of Shoulder in Coronary Disease. A. Schott.—p. 733.
- Collapse of Lower Lobes of Lungs in Children. N. C. Oswald.—p. 736.
- Osteomalacia. J. P. Maxwell.—p. 738.
- Hemophilus Influenzae and Its Relation to Epidemic Influenza. A. B. Rosher.—p. 749.

Painful Shoulder in Coronary Disease.—Schott points out that in some patients with coronary disease a painful disability of one or both shoulders resembling scapulohumeral periarthritis is the outstanding symptom. If this occurs a short time after an attack of coronary occlusion during which pain radiated to the affected shoulder, the condition may wrongly be considered to be just the usual manifestation of myocardial infarction. The author reports 6 patients with coronary disease associated with a painful disability of the shoulder. Some relationship between these two conditions appears to exist although its mechanism is obscure. No single method of treatment has proved generally successful, and there is hardly a type of physical therapy which has not been suggested. In the acute stage the administration of morphine may be necessary. The arm should be rested in abduction. Infiltration of the painful area with a solution of 1 per cent procaine without epinephrine can be repeated daily and combined with the administration of acetylsalicylic acid. Manipulation under an anesthetic, which is contraindicated in the acute and subacute stages, is the method of choice and is often curative when limitation of movement persists owing to adhesions. It is suggested that examination for coronary disease of larger numbers of patients over 40 years of age with painful disabilities of the shoulder—especially the left—without obvious cause is desirable in order to establish the frequency and nature of this relationship.

Acta Radiologica, Stockholm

28:313-413 (Aug. 30) 1947. Partial Index

- Paralactic Fluoroscopy as Aid in Bronchoscopic Extraction of Foreign Bodies. S. Welin.—p. 313.
- Case of Osseous Changes in Patient with Hemophilia. J. Petersen.—p. 323.
- Roentgenologic Examinations of Ileus. J. Frimann-Dahl.—p. 331.
- Relief Picture in Gastric Carcinoma. N. H. Krisnapoller.—p. 352.
- Encephalography with Small Amounts of Air. K. Kristiansen and A. Vogt.—p. 355.
- *Treatment of Lymph Node Metastases from Intraoral Carcinomas with Special Regard to Indications for Total Neck Dissection. R. Weyde.—p. 367.
- Demonstration of Movement of Mitral Ring by Means of Phase-Directed Photographs of Heart. O. Hubacher.—p. 386.

Cervical Lymph Node Metastases of Oral Carcinomas.

—Weyde discusses the treatment of the metastases in the cervical lymph nodes from carcinomas of the oral cavity on the basis of histologically verified cases treated in the Norwegian Radium Hospital during the ten year period from 1932 to 1941, inclusive. There was a total of 386 patients. Three stages are differentiated on the basis of the presence and extent of metastases to the lymph nodes. The first stage is free of clinical symptoms of such metastases; in the second stage clinical metastases are limited and operable; in the third stage the lymph

node metastases show commencing fixation or have infiltrated into the surrounding structures, or they are bilateral and may be operable or inoperable. The author describes the treatment of the primary lesion and of the lymph nodes, with particular attention to "neck dissections." At the Norwegian Radium Hospital the indications for neck dissection are essentially those formulated by Duffy, although in certain cases a wider range of indications has been used. For instance, neck dissection is done when the tumor extends beyond the midline of the oral cavity as long as the primary lesion can be controlled. In stage I prophylactic neck dissection is not indicated. In stage II radiation treatment of the cervical metastases is started simultaneously with treatment of the primary tumor, and neck dissection is performed eight weeks later if the lymph node tumor has not disappeared. Neck dissections in operable metastases from highly differentiated carcinomas have a low mortality and little chance of recidivation. Patients with metastases from less well differentiated carcinomas, however, ought not to undergo operation. In stage III there is every reason to limit the treatment to palliative radiation.

Maandschrift voor Kindergeneeskunde, Leyden

15:339-370 (Oct.) 1947

Tuberculosis in Early Life and in Adults. G. J. Hueter.—p. 339.

Visible Speech. J. van Luyken.—p. 350.

*Meningoencephalitis After Epidemic Parotitis. A. K. A. G. Hodenpijl and K. R. de Jong.—p. 355.

Meningoencephalitis After Epidemic Parotitis.—Hodenpijl and de Jong observed in the course of an epidemic of mumps that in a city of about 100,000 inhabitants encephalitis developed as a complication of mumps only occasionally (10 cases), whereas in a neighboring town of 1,800 inhabitants encephalitis occurred in 18 of 50 persons with mumps. The most surprising aspect was that in 10 of the 18 children encephalitis appeared without there being signs of parotid swelling either before, during or after the onset of encephalitis. A number of these children, however, had brothers or sisters with mumps or had had contact with mumps patients in school. Spinal puncture was done in 6 of the patients and revealed increased pressure and a high number of lymphocytes. All patients recovered.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:2961-3040 (Oct. 18) 1947. Partial Index

The Scabies Problem in the Netherlands. B. J. W. Beunders, H. Wolf and J. van der Veen.—p. 2966.

*Alimentary Hypoglycemia After Operations on Stomach. W. B. J. Gerrits and J. A. Rodbard.—p. 2973.

*Cavity Formation in Boeck's Sarcoid. A. C. Appelmann.—p. 2985.

Alimentary Hypoglycemia After Operations on Stomach.—Gerrits and Rodbard point out that spontaneous hypoglycemia can be elicited not only by adenoma of the islets of Langerhans but also by a great number of other factors. There exist organic and functional types of hypoglycemia. Alimentary hypoglycemia after gastric operations is grouped with the functional forms. The authors report the case of a man who had undergone gastric resection according to Polya-Reichel and who subsequently showed spontaneous hypoglycemia. They think that this condition probably is frequently overlooked. In this syndrome hypoglycemia often arises some hours after a meal rich in carbohydrates. Explanation of the alimentary hypoglycemia should be sought in nervous influences on the blood sugar level from the stomach and intestinal tract, which eventually may be expected to undergo pathologic changes.

Pulmonary Cavities in Boeck's Sarcoid.—Appelmann presents histories of 2 patients with Boeck's sarcoid, in whom pulmonary cavities developed. The first of the patients died less than two years after he was first seen by the author. The diagnosis of Boeck's sarcoid had been verified by biopsy, but although tubercle bacilli were searched for during life as well as at necropsy, they could not be demonstrated. In the second patient the search for tuberculosis likewise remained negative. The author admits that the roentgenogram in the reported cases differed somewhat from that seen in tuberculosis, but he also cites factors which suggest the possibility of a tuberculous etiology of Boeck's sarcoid.

Nordisk Medicin, Gothenburg

36:2001-2038 (Oct. 3.) 1947. Partial Index

Conditions for Absorption of Calcium and Phosphorus from Intestinal Canal. H. Møllgaard.—p. 2001.

Hospitalstidende

*Penicillin in Treatment of Meningitis. Report of Cases. M. R. Schmidt.—p. 2007.

Norsk Magasin for Lægevidenskaben

*Acute Stenotic Laryngitis and Laryngotracheobronchitis (Pseudocroup) in Childhood. Clinical Studies of Hospital Cases in Winter of 1946-1947. H. C. Arnesen, C. J. Bjerkelund and J. Bøe.—p. 2015.

Hygiea

Plastic Surgery with "Lambeau" (Loose Skin Still Pedunculated) in Treatment of Finger Injuries. V. Henriksson.—p. 2023.

Problems in Surgery of Hand. E. Severin.—p. 2024.

Treatment of Fractures of Calcaneus According to Westhues. G. Lauritzen.—p. 2025.

Total Extirpation of Patella in Recent Fracture. G. Lauritzen.—p. 2027.

Origin of Peritonitis in Perforation of Stomach. E. Gabrieli.—p. 2028.

Penicillin in Treatment of Meningitis.—Bacteria were found in the cerebrospinal fluid in 5 of Schmidt's 23 cases: 1 pneumococcus, 1 staphylococcus, 2 meningococci and 1 Hemophilus influenzae. Penicillin was given intracisternally once or twice daily and intramuscularly, together with "lucozil" (N'-[5-methyl-1,3,4-thiadiazol-2-yl]-sulfanilamide); the patient with staphylococcal meningitis died from the grave brain lesion, the one with influenza meningitis died a month later from hydrocephalus. Nine patients believed to have bacterial meningitis were treated similarly without waiting for the results of culture. All recovered except 1 patient with chronic purulent meningitis due to Proteus infection, presumably originated through congenital fistula. Because of lesions of the dura and the possibility of infection 9 patients were given penicillin prophylactically, in 5 cases intracisternally and intramuscularly, in 2 intramuscularly and in 2 by daily instillation through subdural drain; concomitant treatment with the sulfonamide drug was given in 5 instances; all recovered.

Acute Stenotic Laryngitis and Laryngotracheobronchitis in Children.—Arnesen and his associates report on 43 cases of pseudocroup in 26 boys and 17 girls aged up to 10 years. Boys predominated only in the first two years of life. The disease was almost epidemic, and protracted dyspnea occurred in many cases. Comparison is made with 14 cases of diphtheria croup in the same age group treated in the same period. Based on the degree of severity the cases of pseudocroup are divided in three groups. The 3 cases in the third group were characterized by a fulminant course after onset as a usual catarrhal infection; 2 of the patients died. Diphtheria could rarely be excluded on admission, and diphtheria serum was given in most cases. Except in the mildest cases sulfathiazole and penicillin were administered. The standard treatment was vapor and rest. Tracheotomy was done in the gravest cases. Effective suction apparatus was not available at the time. The usual acute stenotic laryngitis is regarded as probably a virus infection. There are indications that the grave forms are due to secondary infection with pyogenic microbes and that the severe course depends in part on the preceding virus infection. Leukocytosis was commonest in true croup, while a leukocyte count within the normal limits but with lymphocytosis dominated in pseudocroup. However, variations from these findings were seen.

Presse Médicale, Paris

55:733-748 (Nov. 1) 1947

Fibrillary and Diencephalic Contractions. H. Roger and J. Cain.—p. 733.

*Arterial Accidents in Course of Penicillin Treatment. A. Courty and A. Biscaye.—p. 734.

Graphic Recording of Electrical Activity of Base of Brain and Its Practical Consequences. J. Faure.—p. 735.

Arterial Accidents in Penicillin Treatment.—Courty and Biscaye treated a woman aged 64 for infected eczema with 800,000 units of penicillin by the intramuscular route every three hours for five days. The eczema was considerably improved but recurred two days later. Penicillin treatment was repeated, with 200,000 units a day given intramuscularly combined with sulfathiazole. The eczema became worse, and sulfathiazole was discontinued while penicillin treatment was continued. On the

fourth day of the penicillin treatment an acute thrombotic arteritis was manifested in both lower extremities accompanied with a sudden rise of temperature to 104 F. (40 C.). Gangrene in the left foot made its amputation necessary. The patient had no previous arterial disturbance. A second case is reported, in which an acute obliterating polyarteritis occurred suddenly in a man with subacute venous septicemia of the lower extremities and spermatic cord but without any apparent arterial involvement. He had been treated for four days with 1,000,000 units of penicillin. Death resulted in twenty-four hours. It is suggested that these arterial accidents have been caused by shock due to the impurity of the penicillin employed or by sensitization that produces in an unstable vagosympathetic system an intense vasomotor response, which was particularly grave because of a preexisting latent arterial involvement, e. g., in case 1. The second case demonstrated that acute arteritis may occur and progress in spite of intensive penicillin therapy.

Revista Española de Tuberculosis, Madrid

16:665-738 (Sept.) 1947

- *Study of Alterations in Gastric Secretion in Tuberculosis. M. Capo Porcel.—p. 665.
Chylothorax in Hodgkin's Disease. P. A. Buñya Godino and A. Buñya Acevedo.—p. 669.
*New Cause of Sudden Death in Artificial Pneumothorax. J. Codina Suqué and J. L. Martínez de Salinas.—p. 681.
Pleural Symphysis. S. Almansa de Cara.—p. 691.
Contribution to Study of Silicosis. J. Lorenzo Jaraba.—p. 703.

Gastric Secretion in Tuberculosis.—Capo Porcel says that although it is generally admitted that hypochlorhydria and deficiency in gastric secretion are frequent in tuberculosis, little attention has been paid to the importance and incidence of this factor. At the sanatorium for tuberculous patients with which the author is connected, studies were made on the gastric function of 100 patients at the time of their admission. Gastric acidity was tested following stimulation with histamine. Achylia resistant to histamine stimulation was detected in 24 patients, and another 33 patients had hypochylia. Gastric disturbances were more frequent in these patients than in those with normal acidity, but substitutional therapy with hydrochloric acid counteracted diarrhea and vomiting and improved the appetite. In 1 tuberculous patient with achylia, necropsy revealed atrophy of the gastric mucosa.

Sudden Death in Artificial Pneumothorax.—According to Codina Suqué and Martínez de Salinas acute accidents of the syncopal type that may cause sudden death have been known to occur during the induction of artificial pneumothorax ever since Forlanini first introduced this form of collapse therapy in pulmonary tuberculosis. Reports about the incidence of this accident vary from 1 to 10 for every 10,000 punctures. The fact that these accidents may result in sudden death has led to considerable speculation about their pathogenesis and possible treatment. The two most widely accepted causal theories are pleural shock and gas embolism. The authors report a tuberculous patient, aged 50, who died suddenly during the induction of an artificial pneumothorax. There was evidence that a spontaneous pneumothorax was the cause of the sudden death. The authors believe that the spontaneous pneumothorax produced the sudden death by way of an "acute cor pulmonale." The measure usually employed for the treatment of the syncopal attack presumably due to gas embolism, such as the elevation of the pelvis, not only is useless in this condition but may cause an exacerbation in that it brings about a more forced respiration with greater intake of air into the pleura. Likewise, cardiac and respiratory stimulants are of no use in the first few moments. The most urgent first measure is the prompt extraction of air by means of a perforated trocar.

Revista Médica de Chile, Santiago

75:495-578 (Aug.) 1947. Partial Index

- *Collective Food Poisoning in 130 Persons. H. Vaccaro, M. Pérez and J. Cabezas.—p. 495.
Cancer of Breast in Man. E. Duval C.—p. 525.

Collective Food Poisoning.—Vaccaro and his associates report an outbreak of food poisoning in 130 persons in a boarding school. Human carriers, contaminated food and contaminated drinking water were not found. *Salmonella typhimurium*

was isolated from the feces of 22 or 23 patients. Agglutinins against *S. typhimurium* in titers varying between 1:20 and 1:320 were found by serologic study in 114 of 116 cases but in none of the blood serums of 118 normal adults of the Chilean population (controls). Higher agglutinin titers were observed when the H antigen was used than when the O antigen was used. The results of agglutination reactions were the same for the rapid as for the slow methods. Seven months after the occurrence of the outbreak the patient's blood contained no agglutinins against *S. typhimurium*. In vitro studies showed that sulfaguanidine has no controlling effect on *S. typhimurium*.

Semana Médica, Buenos Aires

54:539-578 (Oct. 2) 1947. Partial Index

- *Streptomycin in Laryngeal Tuberculosis: Early Results in Case. M. E. Vergelin and R. Cohen Rua.—p. 545.

Streptomycin in Laryngeal Tuberculosis.—The patient was a woman aged 46 with laryngeal tuberculosis secondary to bilateral pulmonary tuberculosis. Streptomycin was administered in a total dose of 40 Gm. in one month, after which it was necessary to stop the treatment for financial reasons. No other treatment was given. The streptomycin treatment controlled dyspnea and cough, with healing of the laryngeal ulcerations and improvement of the patient's general condition and the pulmonary lesions.

Zeitschrift für Kinderheilkunde, Heidelberg

65:1-154 (June) 1947. Partial Index

- Acute Hemolytic Anemia (Lederer) with Uremia and Heart Block. Margarette Kettner.—p. 1.
*Cushing's Syndrome in Twenty-Month-Old Girl. Karla Weisse.—p. 9.
Exanthematic Typhus in Children. H. W. Ocklitz.—p. 18.
Experiences with Infectious Gastroenteritis in Infants and Young Children. Maria Schimansky.—p. 33.
*Pernicious Anemia During Childhood. H. Kade.—p. 47.
Citric Acid and Rickets. E. Heinz, E. Müller and E. Rominger.—p. 101.

Cushing's Syndrome in Girl Aged Twenty Months.—Weisse reports the clinical history of a girl who developed normally until about 15 months of age. After an attack of measles which was complicated by otitis media, the mother noticed a great increase in weight and in the growth of hair. The appetite was enormously increased, and the child became irritable. The skin assumed a bluish red color and venectasias appeared. There was macrogenitosomia, mild hypercholesterinemia and changes in the carbohydrate metabolism. After observation in the hospital the existence of a Cushing syndrome was no longer doubted, but the etiologic differential diagnosis posed difficulties. Further studies, particularly the demonstration of male sex hormone in the urine, suggested the presence of a tumor of the adrenal cortex. An operation was performed and disclosed a vascular tumor of the size of a hen's egg on the left adrenal gland. It was possible to leave the adrenal in place. The postoperative course was at first favorable. Then, the blood pressure decreased and the child died on the third postoperative day without responding to treatment.

Pernicious Anemia During Childhood.—Kade presents the history of a boy, who has been followed for nearly six years and is now 19 years of age. He came under observation at the age of 14. At that time there was lack of appetite, vomiting, fatigue, pallor, burning of the tongue and paresthesia in the hands. The results of a study of the blood and the deficiency of hydrochloric acid in the gastric juice suggested pernicious anemia. Treatment was instituted, and the patient could be maintained in a fairly normal status with continuous liver therapy. The author stresses that this was the only case of pernicious anemia involving a child in a total of 376 cases. The family history of the patient was investigated and revealed anemia in the sister, slightly increased erythrocytic diameter in the father, slight hypersegmentation in the mother and deficient gastric secretion in father, mother and sister. It is pointed out that the chronic anacid gastritis of patients with pernicious anemia may predispose to the development of cancer, as has been proved by necropsies in large numbers of cases. Continuous roentgenologic control of the gastric mucosa of patients with pernicious anemia is therefore emphasized by the author.

Book Notices

Intracranial Complications of Ear, Nose and Throat Infections. By Hans Brunner, M.D., Associate Professor of Otolaryngology, University of Illinois College of Medicine, Chicago. Cloth. Price, \$8.75. Pp. 444, with 95 illustrations. The Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1946.

The author is well qualified to write a book on this subject. Clinician, teacher and investigator, he has long been world renowned as an authority in this field.

The incidence of intracranial complications has sharply declined, due to obvious factors. One may differ with the author in his statement that the influence of chemotherapy (and antibiotics) in the prophylaxis of these complications is controversial. All can agree that the introduction of these new agents alters the customary symptomatology and renders the diagnosis and treatment of intracranial complications more difficult. Thus the great need for just such exact information as is presented in this volume is apparent, for there can be no substitute for exact diagnosis and rational therapeutic methods when such complications do arise.

Although the greater portion of the book is devoted to clinical aspects, the section on anatomy and physiology is equally excellent, presenting many fundamentals which are not available elsewhere, and which are of great importance in understanding the why and the wherefore of intracranial infections. The clinical chapters consider completely in orderly sequence the possible intracranial complications, starting with diseases of the dura mater and progressing inward to the venous sinuses, meninges and brain itself, which follow ear, nose and throat infections. Each subject is presented under the headings of pathology, symptomatology, prognosis and treatment. Everything is given with such clarity of clinical detail that the book will serve both as a classic textbook for various interested specialists and also as a specific reference.

Guide to Health Organization in the United States. By Joseph W. Mountain Medical Director, and Evelyn Flook, Administrative Analyst, U. S. Public Health Service. Prepared by Direction of the Surgeon General, Federal Security Agency, U. S. Public Health Service, Miscellaneous Publication No. 35. Paper. Price, 20 cents. Pp. 71, with 10 illustrations. Supt. of Doc., Government Printing Office, Washington 25, D. C., 1947.

There is no "Health Organization" in the United States; there are many "health organizations." This little guide puts each of these organizations in its place relative to the others. At no point does it suggest that there should be a single Health Organization.

The authors look at national health from the point of view of the national government; this tends to suggest the usefulness of a single, all-inclusive agency at the national level "to do things right." This suggestion the authors have avoided, and they give their reasons:

When the general scheme of health organization is first explained, the visitor or casual observer often is amazed that it works at all. But it does work, even though at times the process may seem cumbersome and inefficient. Its high performance is well demonstrated by rather obvious and tangible results. The people of the continental United States now enjoy a level of health and well-being never before attained by any population of comparable size.

The health organizations described by the authors are those which comprise the setting within which the private practice of medicine is conducted. The authors do not suggest that the private practice of medicine should be impaired in any way; nor do they say anything whatever of compulsory health insurance.

The discussion of nongovernmental health organizations is short, perhaps because these organizations have been so well covered by other sources. The section devoted to health activities of federal agencies is the fullest. The discussion brings out an important feature of government geography sometimes overlooked by proponents of One Big Health Agency: the large number of federal agencies which have health functions in connection with other duties; functions which could hardly be removed from the agency without increasing confusion all around. Examples of this are the Tennessee Valley Authority, with malaria control functions which require altering water

levels in its lakes and which are therefore indissoluble from its navigation and flood control functions; and the Farm Home Authority, with programs for health in connection with rehabilitation of farmers of low income—rehabilitation which requires intimate knowledge by administrators of agricultural techniques rather than of health measures.

In presenting the picture of state health organizations the authors have met the problem of diversity by a simple tabular comparison, indicating the frequency of each type of organization.

The authors emphasize that there are 38,000 units of local government in the United States, apart from school and other special purpose districts. A neat bar-diagram device is used to present the picture of local health units, with state support where applicable. The authors use the following quotation from Mustard:

... The vast majority of routine health service received by the people of the United States is delivered by local agencies. The federal government may subsidize and indirectly shape local health departments, the state health department may determine major policies for local agencies, set standards, promulgate regulations and even directly supervise them, but the final determining factor in the effectiveness of a public health program rests with the workers in the locality where the problems are occurring.

Sinn und Gehalt der sexuellen Perversionen: Ein daseinsanalytischer Beitrag zur Psychopathologie des Phänomens der Liebe. Von M. Boss. Cloth. Price, 12 Swiss francs. Pp. 130. [Sole distributors for the U. S. A. and Canada: Grune & Stratton, Inc., 381 Fourth Ave., New York] Hans Huber, Marktgasse 9, Bern 16, 1947.

Dr. Boss is one of the outstanding members of a Swiss group who have in recent years been interested in what they term "existential analysis" (daseinsanalyse). In his discussion of the perversions Boss contrasts his theories with the psychoanalytic concepts and also with the so-called "anthropologic" theory of perversion. The exponents of the latter theory emphasize the nature of man (anthropos) as a total entity. They aim to study the human being in relation to his place in the "objective" world, eliminating "subjective" evaluations as much as possible.

According to Boss, the love life of man is to be considered as an entity rather than as a composite of many infantile and adult instinctual drives. He is evidently well versed in psychoanalytic theory, although he carefully avoids the use of psychoanalytic terminology in any of his formulations whenever possible. However, the clinical material makes it evident to the reader that he makes full use of his psychoanalytic knowledge in order to evaluate the patient's "existential" position. Although Boss does not actually deny this, he strives to formulate his theories entirely in terms of the conscious experiences of the patient and in somewhat vague cosmologic phraseology.

He concludes that sexual perversion is, in each case, the only possible means by which love can break through the otherwise impenetrable barriers previously imposed on the personality development by the environment. No matter how divergent from more normal love impulses, the perverse act itself is regarded as an attempt on the part of the patient to reestablish a positive affective relationship with the outside world and with other human beings, even when it is manifested in so remotely displaced a fashion as in fetishism.

In the discussion of psychoanalysis Boss confines the argument to the early writings of Freud as exemplified by the libido theory and does not at any time refer to the more recent contributions of psychoanalysis in relation to ego psychology. The emphasis is on the gross pathology of environmental influences, on the restrictions imposed on the erotic impulses by fear, shame and disgust, and on the ultimate break-through of love in a fashion peculiar to the needs of the individual as a whole. Boss differs with the so-called "anthropologic" psychologists in their explanation of the perversions as "a destructive reaction" (Gebässel), or as "a depreciation and deformation of accepted ethical values" (Straus). He does not consider hate as antipodal to love, but assigns this role to anxiety.

The clinical application of Boss's findings is not in itself new to American psychiatrists and psychoanalysts, since it is based on the one hand on something akin to psychobiology and on the other to that type of understanding of the deformation of the ego with which most modern psychoanalysts are fully conver-

sant. The point of interest lies chiefly in the emphasis not on the structure of the perversion but on its economic usefulness to the personality of the patient, so far as it constitutes his particular and only means of reasserting his love impulses, whatever their origins or structure. Boss regards the perversion as an attempt at restitution and an abortive effort to reestablish contact with reality and to wring some gratification from it, no matter how minimal. That this gratification is not simply of a somatic-erotic nature Boss is careful to emphasize, pointing out that the real need of the patient is not solely autistic but directed toward some kind of a common experience with other human beings.

In the aggregate Boss's clinical achievement seems roughly to parallel what is commonly called "psychoanalytically oriented psychiatry." The fact that Boss has had the training and experience of a psychoanalyst must be taken into consideration, and the question arises how much "existential" information could be obtained from conscious material alone, particularly as the two most thoroughly documented case presentations were those of patients whom Boss had previously treated by the psychoanalytic method.

Lehrbuch der Urologie. Von Prof. Dr. Med. J. Minder, ehem. Ordinarius für Urologie und Direktor der Urolog. Universitäts-Klinik Budapest zur Zeit Spezialarzt der Urologie in Zürich. Sammlung medizinischer Lehr- und Handbücher für Ärzte und Studierende, Band IV. Cloth. Price, \$7.50 Swiss francs. Pp. 348, with 62 illustrations. [Distributed in U. S. A. and Canada by Grune & Stratton, Inc., 381 4th Ave., N. Y. 16.] Hans Huber, den Marktasse 9, Bern, 1946.

This textbook of urology was written for general practitioners and others with little urologic experience. In the midst of the present trend toward textbooks of urology in two or more volumes, the author has succeeded in presenting most of the pertinent urologic facts in one volume.

The text is written clearly and simply. Each chapter is outlined with the aid of marginal notes which facilitate reading. Essential information from the basic sciences is introduced in proper perspective. The illustrations are few and leave something to be desired. The chief criticism that can be directed against the book is the omission of recent advances in urology. Newer knowledge of the bacteriology of infections of the urinary tract and its importance in the treatment of such infections is missing. Chemotherapy in infections of the urinary tract is carried to the sulfonamide era only. This can undoubtedly be accounted for by the author's inability, as a result of the war, to obtain experience with the newer and more powerful chemotherapeutic agents. Perhaps for the same reason, newer knowledge concerning the treatment of cancer of the prostate, both medical and surgical, is also omitted.

La réticolose histiomonocytaire. Par P. Cazal, chef de clinique à la Faculté de médecine de Montpellier, Montpellier. Paper. Price, 350 francs. Pp. 195, with 32 illustrations. Masson & Cie, 120 Boulevard Saint-Germain, Paris 6^e, 1946.

While hematology in general suffers from a complexity of terms, designations of conditions involving the reticuloendothelial system are particularly confusing. One can therefore sympathize with the author's effort to bring some semblance of order out of this ill defined group of diseases, but it is doubtful whether his conclusions will be completely accepted by other authorities in this field. In the first part of the monograph he attempts to define his term of *réticolose histiomonocytaire* as a pure malignant metaplastic proliferation of the reticuloendothelial system and does not agree that it should be grouped together with other less specific terms. He uses the terms reticulosis or reticuloendotheliosis generally to designate the specific histologic unit involved—the reticulum or stroma. Cazal is in agreement with Downey in his use of the term leukemic reticuloendotheliosis in referring to a leukemia with a primary, irreversible hyperplasia of the reticuloendothelium (the Schilling type) and differentiates this from most cases of monocytic leukemia (Naegeli type) where the reticulum is not involved. After a short discussion of the history of the subject and a review of the foreign publications since 1929, the author reviews the history of French literature and research in this field. In his discussion of terminology he includes the following conditions under the term *réticolose histiomonocytaire*: Letterer-

Siwe's disease, leukemic reticulosis (Schilling) and atypical forms such as granulomatosis and mesenchymatous sarcoma. He then discusses localization of the disease process and tabulates the organs involved according to clinical observation. Even if the liver and spleen are not enlarged they may show involvement pathologically. The hepatosplenic form does not respond well to roentgen therapy ultimately, while the adenopathic form yields more favorably. The pathologic changes in other organs and tissues are discussed in detail. The blood picture is distinctly variable from a normal blood picture, leukocytosis or leukopenia. Generally the monocytosis is diagnostic and occurs in about 70 per cent of the cases with morphologic changes of large, indented nuclei, often bizarre in appearance, with nucleoli and with the cytoplasm rich in azurophilic granulation. The clinical forms and pathologic picture of the typical disease are next discussed in detail. The author attempts to differentiate some of the etiologic and pathogenetic features of this disease from those in other diseases of a neoplastic nature. The treatment that the author advises is ascorbic acid in high doses, blocking the reticuloendothelial system with congo red, anti-reticulum serum, colchicine and roentgen therapy. In the concluding section of the monograph the author discusses the relation of this disease to agranulocytosis, granulomatosis (Hodgkin's disease, mycosis fungoides and eosinophilic granuloma), Still's disease, lipid storage diseases (with special reference to xanthomatosis) and reticulum cell sarcoma. The bibliography is adequate and contains short abstracts of each of the articles cited. The illustrations are black and white. A working concept of the metaplastic and neoplastic reactions of the reticuloendothelial system would be desirable, but one concludes this monograph with a confused state of mind. Perhaps an adequate amount of information is not available, but some concept might be formulated which would reduce this subject to a more rational basis than in this presentation.

Adjustment to Physical Handicap and Illness: A Survey of the Social Psychology of Physique and Disability. By Roger G. Barker, Beatrice A. Wright and Mollie R. Gonick. Social Science Research Council Bulletin 55. Paper. Price, \$2. Pp. 372, with illustrations. Social Science Research Council, 230 Park Ave., New York 17, 1946.

This work is Bulletin 55 (1946) of the Social Science Research Council. The basic approach is that of the research worker in psychology dealing with behavior manifestations resulting from reactions of the individual to variations of his health and physical structure, both congenital and acquired. The material presented is not without definite value for those who desire assistance in finding appropriate productive employment for the physically impaired.

The presentation begins with reference to factual data and a discussion of behavior reactions attributable to variations of body conformation and function. Parts of this section are technical and use terms and schematic devices which will be difficult for those not conversant with advanced psychology.

"Crippling," forms one of the large subdivisions of this publication and includes all previous pertinent studies. There is a detailed comparative study of the situation reactions of 2 female adults; one having had poliomyelitis in childhood with permanent impairment of the lower extremities, the other with an essentially whole body. Their contacts with reality are covered in a manner which illustrates the sociologic problems presented.

Tuberculosis is subjected to close scrutiny as a modifier of behavior. The concepts and prejudices of society toward the tuberculous person are evaluated.

The material devoted to impaired hearing is a monograph in itself, so complete is the coverage. The discussion proceeds from basic psychologic considerations to the cultural, educational and legal impacts on those deprived of hearing. The long chapter on "Employment of the Disabled" contains much practical information, with studies on employer practices in hiring the physically impaired, occupational records of impaired workers, performance of the physically impaired, earnings and promotions, job stability, job analysis, accident proneness and insurance.

The highlights of this bulletin might be referred to as follows: (1) a voluminous bibliography, (2) systematic arrangements of research summaries, (3) deprecation of the practice of announc-

ing conclusions on the basis of insufficient data and the closely associated pitfall of allowing the isolated unusual or difficult case to color unduly the thinking on the group within which it falls and (4) conclusions and suggestions for new subjects to be investigated.

Elementi di fisiologia e patologia dell'uomo in volo. Di Lo Monaco Croce Tommaso. Presentazione del Prof. R. Margaria. Paper. Price, 300 lire. Pp. 257, with 113 illustrations. Ministero dell'Aeronautica, Stabilimento Fotomeccanico, Roma, 1946.

This well presented and clearly written book is divided into three main sections; the first two deal with the effects of high altitude and acceleration on the organism and the third with the methods, techniques and apparatus employed in the investigation of aeronautical physiology. The substantial amount of data lacks adequate interpretation, leading to the impression that the volume was assembled somewhat hastily. The book is intended both for the physiologist interested in aeronautic problems and for the pilot who wishes to obtain an intelligent understanding of the functional changes that occur in flying. Both the physiologist and the pilot will find profitable the reading of this book, which, however, contains too much physics and too little physiology to be of sound interest to the physiologist and too little mechanics and too much physiology for the average flier.

A Course in Practical Biochemistry for Students of Medicine. By A. T. Cameron, M.A., D.Sc., F.R.I.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba, Winnipeg and Frank D. White, A.R.T.C., Ph.D., F.R.I.C., Assistant Professor of Biochemistry, Faculty of Medicine, University of Manitoba. Fifth edition. Fabrikoid. Price, \$3.50. Pp. 216, with 23 illustrations. The Macmillan Co., 60 Fifth Ave., New York, 1946.

This textbook is designed to acquaint medical students with the biochemical tests which have a bearing on subsequent medical subjects and the clinical applications of biochemistry. A large number of qualitative and quantitative procedures are presented in a concise, understandable and logical manner. The more complex biochemical procedures are purposely omitted, and quantitative procedures are limited to one approved method.

The book is not intended for use by students specializing in biochemistry and would be unsuitable for such a purpose. There are few alterations and additions to this revision. The textual matter might well have included brief descriptions of some of the new instruments which have come into prominent use in analytic biochemistry.

The Public Welfare Directory 1947. John L. Goetz, editor. [Eighth annual edition.] Fabrikoid. Price, \$1.80. Pp. 307. American Public Welfare Association, 1313 E. 60th St., Chicago 37, [n. d.].

The 1947 Directory, published by the American Public Welfare Association, is limited to agencies that expend public funds for welfare purposes. Uniformity, through use of code, is maintained from the national level through the state level and into counties and cities. The code includes eighteen public welfare services or programs. The agency and person or persons responsible for administration are listed.

As an additional aid to welfare workers the directory includes an explanation of methods to be followed in interstate correspondence concerning welfare clients. To supplement this, an appendix outlines the types of information usually available from the agencies and the conditions under which information will be supplied. A table shows the residence requirements of general assistance programs.

Diagnostic neuro-chirurgical. Par Jean Guillaume et Jean Sigwald. Préface du Professeur Georges Guillaum. Paper. Price, 500 francs. Pp. 457, with 75 illustrations. Presses Universitaires de France, 108 Boulevard Saint-Germain, Paris 6^e, 1947.

A splendid contribution to the rapidly growing neurosurgical literature has been made by these two authors. The book is devoted to the problems of diagnosis and is of special value to the neurosurgeon, since the entire outlook of the authors is primarily neurosurgical. Neuropathology and neurophysiology are thoroughly and interestingly covered, with excellent line drawings plentifully evident. Neurosurgical diagnostic procedures are well described. Regional diagnosis from symptoms is correlated with anatomic location of the injury or disease.

This is a valuable addition to the library of any neurologist or neurosurgeon with a working knowledge of French.

The Influence of Positive Pressure Breathing on the Circulation in Man. By Lars Werkö. Also published as a Supplement to Acta medica Scandinavica. Paper. Pp. 125, with 20 illustrations. Alb. Bonniers Boktryckeri, Stockholm, 1947.

This monograph reports a detailed investigation of three types of positive pressure breathing. The final recommendation "when positive pressure breathing is used for artificial respiration, the inspiratory period with high pressure should be short and the expiratory period should be long, with expiratory mean mask pressure as near atmospheric as possible" is supported by impressive observations of cardiac output and other hemodynamic variables. The monograph is recommended to all those who have occasion for positive pressure therapy, notably to anesthesiologists and those concerned with respirator design.

Medicine in the Changing Order: Report of the New York Academy of Medicine Committee on Medicine and the Changing Order. Cloth. Price, \$2. Pp. 240. The Commonwealth Fund, 41 E. 57th St., New York 22; Oxford University Press, Amen House, Warwick Square, London, E. C. 1, 1947.

Four years ago the New York Academy of Medicine formed the Committee on Medicine and the Changing Order to study the economic and social changes taking place in medical care. The forty-eight members of this committee have examined critically every phase of the current medical situation and have published the results in ten separate volumes, each dealing with a special subject.

In this report the committee attempts to draw together its findings and present its conclusions as to what may best be done to remedy present inadequacies. The committee has recognized the futility of viewing medical care as an isolated phenomenon and has made an effort to present it as a part of the whole pattern of present day living.

The book is suitable for study groups of organizations and particularly for the woman's auxiliaries of the various medical societies.

Methods of Diagnosis. By Logan Clendening, M.D., F.A.C.P., and Edward H. Hashinger, M.D., F.A.C.P., Professor of Clinical Medicine, University of Kansas School of Medicine, Kansas City. Cloth. Price, \$12.50. Pp. 868, with 143 illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1947.

In this remarkable book, chapters 1 and 2, called Principia Diagnostica, deal with a subject not found in any other modern book. Ordinarily the subject of logic and diagnosis is acquired by the student in ward work in a rather haphazard fashion. By some it is not acquired after a lifetime of practice. Instruction in this subject should be helpful to the intelligent student. The book covers practically the entire field of diagnosis in the realms of medicine and surgery and is replete with stimulating quotations and references to original work. The semicolloquial style of writing will appeal to most students. By and large the book, with its homely line drawings and photographs, is worth the reading for any student of medicine.

Chronic Disease and Psychological Invalidism: A Psychosomatic Study. By Jurgen Ruesch, M.D. In collaboration with Robert E. Harris, Ph.D., and others. With a foreword by Karl M. Bowman, M.D. From the Division of Psychiatry, University of California Medical School and the Langley Porter Clinic, San Francisco. Psychosomatic Medicine Monographs. Published with the Sponsorship of The American Society for Research in Psychosomatic Problems. Paper. Price, \$3. Pp. 191. Psychosomatic Medicine, 714 Madison Ave., New York 21, 1946.

This monograph deals with the psychologic factors that prolong convalescence following a chronic disease. The material is well documented and objective. All practitioners are at some time confronted by the problems of delayed convalescence without apparent organic basis.

Hallux valgus. Por Carlos Khoury. Tesis de doctorado, Universidad nacional de Buenos Aires, Facultad de ciencias médicas, Escuela de medicina. Paper. Pp. 227, with 91 illustrations. Buenos Aires, 1946.

This Spanish work presents its material in good sequence. The bibliography is extensive but rather superfluous. The detailed table of 126 cases is superfluous. The author describes and illustrates various operations such as the Schede, Silver, Stein, Keller, Hueter, Mayo, Girdlestone, Lapidus, Hawkins and McBride. The publication would be more useful if he told which operations were best and why and sustained his opinion with case reports.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

ATOMIC ENERGY AS A THERAPEUTIC AGENT

To the Editor:—I should like information on the substances developed from atomic energy that are useful in the treatment of Hodgkin's disease.

Oscar A. Kafer, M.D., New Bern, N. C.

ANSWER.—The press has overemphasized the present importance of "atomic energy" as a therapeutic agent for neoplastic diseases. There is no substance developed from atomic energy which has proved of special benefit in the treatment of Hodgkin's disease. In the past radioactive phosphorus has been employed, but the results have not been superior to, or possibly equal to, those attained by the use of roentgen ray therapy for this condition. If atomic energy is to be employed for the development of a therapeutic measure for Hodgkin's disease, it will be in the form of some radioactive material that will show a decided predilection for concentration in the lymphatic tissue. Since extensive trial has shown that irradiation is at best a palliative measure, although sometimes effective, the therapy which might be expected from atomic energy will be some form of radiation and therefore will be essentially of a palliative nature.

ARACHNOIDITIS WITH TUBERCULOSIS

To the Editor:—A man aged 38 was first treated for right unilateral pulmonary tuberculosis in 1933. In 1941 he was found to have an extensive tuberculous infection of the right chest wall, including two upper ribs and mixed empyema. Thoracotomy was followed by four stages of thoracoplasty, the last being a modified Schede operation which uncapped the remaining empyema cavity in January 1944. In December 1943 pain over the thoracic portion of the spine and radiating around the right side of the chest, slight subjective numbness of the lower part of the body and slight sphincter weakness were reported. The symptoms remained essentially unchanged until April 1944, when there developed complete paralysis of the lower half of the body, with loss of sensation. Laminectomy confirmed the diagnosis of extensive adhesive arachnoiditis. Within a year partial control of the bladder and rectal sphincters returned, along with enough voluntary control of the legs to permit self care in bed. More recently the patient has been able to get into a wheel chair and propel himself without aid. Examination at present reveals three draining sinuses in the right chest wall, one being about 3 inches (8 cm.) from the spine. There is decided spasticity and weakness of both legs, with occasional clonic spasms. Abdominal reflexes are absent, lower tendon reflexes bilaterally increased. There is a bilaterally positive Babinski sign, with ankle clonus. Sensory examination reveals hyperalgesia of the legs except for a small area of anesthesia on the left ankle. There is usually no urinary retention. The weight is well maintained. Physiotherapy has not been attempted because of continuing mixed infection in the chest wall. The debility and the severity of the neurologic symptoms vary with drainage. Is the danger of a return of the extreme spinal disability great enough to contraindicate treatment of draining sinuses by surgical intervention with or without streptomycin? If so, what treatment, if any, should be given?

Amelia G. Wood, M.D., Richmond, Va.

ANSWER.—If debility and the severity of the neurologic symptoms increase with decrease in drainage from the sinuses, the patient's prognosis should be improved if constant good drainage can be established. One of the sinuses may be directly connected with the intraspinal lesion or indirectly connected with it through a residual empyema cavity or cleft. If there is any doubt about there being free dependent drainage from the empyema or any extension of it, such drainage should be first established; this might indirectly drain the sinuses from within. If the condition of the sinuses were unimproved a month or two later, surgical exploration of the sinus nearest the spine, or perhaps all the sinuses, should be made in an effort to find poorly drained abscesses. If preoperative injection of the sinuses with iodized oil (followed by stereoscopic roentgenograms and a flat lateral film) need to be done, the injection should be carried on only at an exceedingly low pressure. In view of the general situation, extensive incisions and resection of extensive areas of tuberculous osteomyelitic regenerated ribs would probably be unwise. Streptomycin might be useful at the time of the sinus operation and afterward, especially if abscesses were found and were well drained. The suggested surgical treatment is more likely to prevent the condition of the spinal cord from becoming worse than to make it worse.

LIVEDO RACEMOSA OR RETICULARIS

To the Editor:—A female 21 months of age was first seen at 5 weeks of age for purplish discoloration of the skin of the right arm and both legs. The mother's pregnancy was normal. The delivery was uneventful except for a fractured right clavicle subsequently discovered in the baby. The family history is irrelevant. The general health of the baby is excellent. From delivery on there has been a violaceous, mottled, somewhat unsightly discoloration of the skin over the arms and the right leg, confined mostly to the dorsal aspects of the forearms and thigh down to and including the knees. The discoloration is a network of purple lines apparently following the distribution of the superficial veins. There has never been swelling, edema or any phenomenon commonly associated with circulatory obstruction of the extremities. The only improvement noted since birth has been that due to normal growth changes. Warmth exaggerates the appearance of the discolored areas, as does exposure to extreme cold. Tanning this summer improved the appearance a little. A tourniquet above the areas increases the discoloration. My original impression was that the child had a congenital abnormality of the superficial veins of the involved areas. What is the diagnosis? The possibilities of treatment? The best course to advise the parents to pursue?

J. M. Albergotti Jr., M.D., Orangeburg, S. C.

ANSWER.—The inquirer does not tell the condition of the subcutaneous fat or of the skin itself, other than the latter's discoloration. In certain atrophies of the skin the venous network becomes more visible and conspicuous. Since no mention is made of such atrophy, it is taken for granted that there is none.

This infant's condition would seem to be best classified under the heading of livedo racemosa or reticularis. According to Becker and Obermayer, these conditions resemble cutis marmorata but are more extensive and more permanent. They may or may not be associated with organic changes in the superficial vessels. From the clinical point of view, livedo reticularis is a more permanent, severer livedo occupying diffusely the areas ordinarily involved in cutis marmorata. Livedo racemosa, on the other hand, is less extensive. Eruptions consist essentially of bluish red, tree-shaped or netlike, for the most part elevated elements from 1 to 2 cm. wide. The color is most intense in the center and fades out toward the periphery. The lesions feel cool to the touch and are uninfluenced by changes in temperature.

In cutis marmorata prolonged application of heat or cold results in an exaggerated expansion of the blood vessels. Livedo racemosa is not associated with obliterative vascular changes. Stroking the skin is followed by prolonged blanching, and the vascular pattern returns with a brilliant hue. These disorders have been reported in association with both organic and functional changes. It is said that the functional forms may be associated with endocrine and toxic disturbances; the organic changes underlying some of these disorders are said to be syphilis, tuberculosis, arteriosclerosis and chronic endocarditis, as well as periarteritis nodosa.

In this infant it would seem best to classify this disorder as a nevusoid one, because the disturbance has been present since birth. The great probability is, of course, that no organic changes have intervened so early in life.

Treatment is unsatisfactory. If any organic disturbance should be found serving as a basis, therapy should be directed toward it.

PREGNANCY FOLLOWING CANCER OF CECUM

To the Editor:—A woman aged 33 had a grade 3 carcinoma of the cecum, which was surgically removed sixteen months ago. Up to this time there is no evidence of recurrence or metastasis. She is now two months pregnant. Is there any danger in permitting her to continue with the pregnancy? She has two children and does not wish to take any unnecessary risks.

M.D., Wisconsin.

ANSWER.—In animal experiments it has been proved conclusively that estrogens are carcinogenic. In human beings, however, the few cases in which there was a presumable relation between excessive estrogen administration and the appearance of cancer are not sufficient on which to base scientific judgment. During the reproductive age of a woman there is a considerable amount of estrogen in the body. Because of the possible stimulating effect of estrogen on carcinoma of the breast there is now a growing tendency to castrate all women in the premenopausal age who are operated on for carcinoma of the breast. The castration may be brought about by radiation therapy but better still by surgical removal of both ovaries. The results appear to be better in the women who are castrated after radical mastectomy than in those who are not castrated. The abolition of ovarian function not only destroys the production of estrogens at their chief source, the ovaries, but also prevents pregnancy, during which large amounts of estrogens circulate in the blood. If pregnancy occurs in a woman who has had a breast removed for cancer, or in one who has metastases following radical mastectomy, there is a possibility that the estrogens produced

during the gestation may reactivate the cancer or aggravate the metastases. That is why pregnancy is contraindicated after a radical mastectomy, and also why the use of estrogens is contraindicated for menopausal symptoms in women who have had cancer of the breast. (Strangely enough, in older women estrogens relieve the pain associated with metastases.)

Not many believe that the estrogens in pregnancy have deleterious effects on cancer other than carcinoma of the breast. However, J. A. Schockaert (*Bruxelles-méd.* 15:1010 [July 14] 1935) is of the opinion that all women presenting a cancer should be castrated regardless of the location of the cancer.

Presumably in the case in question there is little if any risk of recurrence of the cancer due to the pregnancy. However, in view of the fact that there is still a possibility of return of the cancer regardless of pregnancy, and the fact that the woman has two living children, a physician probably would not be criticized for terminating the pregnancy.

MULTIPLE SPONTANEOUS ABORTIONS

To the Editor:—A woman physician (American) had two normal pregnancies with normal full term healthy infants in 1938 and 1940. In the past four years five spontaneous abortions have occurred from the fourth to the tenth weeks of gestation, with the exception of the fourth, which was a missed abortion with the fetus which died at about the fourth month expelled two months later. The general state of health is excellent. Pelvic examination has always revealed normal conditions. Menses between pregnancies are normal. The Rh factor is positive; endometrial biopsy revealed nothing abnormal. The basal metabolic rate varies from minus 19 to minus 28 per cent. Thyroid extract has been given during the last three pregnancies, 2 grains (0.13 Gm.) a day, larger doses causing loss of weight below normal for patient. Progesterone, "ephynal acetate" (alphatocopherol acetate) and vitamin B complex have been given during each pregnancy in the usual doses. Mild secondary anemia has been controlled with iron preparation. During the last pregnancy estrogen was added in the form of "progyon B," 10,000 international units three times a week. Activity has been restricted during the last two pregnancies but strict rest in bed has not been enforced. Have any diagnostic factors been overlooked? The patient's present age is 40. Is another trial advisable? What should be the therapeutic program if pregnancy does take place?

M.D., China.

ANSWER.—It is not stated whether this woman had her two full term living children in the United States or in China. Not infrequently American women who move to China have menstrual irregularities and spontaneous abortions. In the case cited in the query, the studies made between pregnancies and the treatment carried out during the gestations have been ample. Considering that the patient will be at least 41 years old if she gives birth to another child, that she has already been pregnant seven times and has two living children, it is not advisable for her to become pregnant again. However, should pregnancy occur, the only addition to the therapy should be large doses of estrogen in the form of 10 to 15 mg. of diethylstilbestrol by mouth every day and complete rest in bed, although the latter is not important after the fourth month.

SWELLING OF THE PAROTID GLAND

To the Editor:—A man aged 23 has the following history and physical findings: Four or five days before coming to me he had the upper and lower three molars of the right side extracted. He had no reaction on that side. He returned to the dentist two or three days later because of external swelling of the left side of the face and neck and was referred to me after dental x-rays did not reveal any pathologic changes on that side. He seemed to have an early case of mumps. Two days later he returned with what seemed to be a clear case of mumps involving the left parotid gland. In addition there was a swelling about the size of my hand in breadth overlying the manubrium. This did not seem to be connected with any structure in the neck. It was tender and had the same feel on palpation that the swollen parotid gland had. It was not red and was assumed to be some aberrant gland which was involved by the same process. There was no elevation of temperature. I should appreciate an explanation of just what this was and its significance, if any.

M.D., Kentucky.

ANSWER.—There are at least two possibilities to consider. First, the question of trauma during the operation. Was the patient's head held in such a position that pressure was exerted on the left side of the face when the teeth were extracted from the opposite side of the mouth? Is it possible that there were infected molars on the left side at the time the teeth were extracted?

The condition described was not likely due to mumps. In severe cases of mumps with bilateral involvement the swelling is sometimes continuous from the parotid glands downward and may overlap the manubrium. However, in two large contagious disease hospitals during a period of many years nothing of the kind has ever been observed in mumps when there was only unilateral involvement. Moreover, the fact that the swelling

overlapping the manubrium in this case was separate and distinct from that which involved the parotid is further reason for not favoring a diagnosis of mumps. It would be interesting to know whether there was a past history of this disease.

It is difficult to dismiss the possibility of trauma as a cause for the condition described. If a white blood count was made and a decided leukocytosis was present, such an observation would be opposed to a diagnosis of mumps. From an explanation of the swelling at the base of the neck, thought may be given to some of the uncommon cystic formations.

PRECAUTIONS BEFORE GOING TO AFRICA

To the Editor:—A man expects to leave for French Equatorial Africa to do construction work. What precautions should be taken as regards immunizations, malaria prevention and the like? He would also like to know what type of clothes to wear and what type of mosquito repellent to use. Any further pertinent information will be greatly appreciated.

J. K. Bembenista, M.D., Buffalo.

ANSWER.—Any one who expects to reside in French Equatorial Africa should be immunized against yellow fever, smallpox and typhoid fever. With regard to the prevention of malaria, it is still necessary in that country to sleep under bed nets from dusk to dawn and avoid going from behind screened quarters any time during this period while actually not in bed. Any of the standard Army or Navy repellents which are available on the open market today are extremely useful compounds.

If the area is especially noted for its incidence of malaria, it would be well to take one tablet of chloroquine biweekly (manufactured under the trade name of "aralen diphosphate"). This drug has been found highly satisfactory in suppressing malaria due to *Plasmodium vivax* and preventing the occurrence of that due to *Plasmodium falciparum*, the most predominate type in West Africa.

DISABLING BLEEDING AFTER OOPHORECTOMY

To the Editor:—A bilateral oophorectomy was performed on a multipara aged 31 because of extensive pelvic endometrial transplants. A "negative" dilation and curettage preceded the operation. For six months after operation she had amenorrhea and minimal menopausal symptoms requiring no treatment. She was completely relieved of pelvic pain and painful defecation. Now she is having extremely profuse menstrual (?) periods occurring every four to five weeks and lasting five to ten days. The amount of blood lost is disabling. Assuming that the oophorectomy was complete, what is the origin of the bleeding and what should be done about it? Pelvic examination reveals normal conditions at present.

M.D., New Jersey.

ANSWER.—There are several possible sources of bleeding in this case. First, perhaps some ovarian tissue was left behind and this began to function abnormally. Second, estrogen production may have started or increased from some other source in the body, most likely the adrenal glands. Third, in spite of the patient's age she may have a cancer of the endometrium. Fourth, the pituitary gland may be a factor in the uterine bleeding in this case. It is assumed that the patient has not been taking estrogens, because it is specifically stated that she had "minimal menopausal symptoms requiring no treatment." As is well known, estrogens can and often do bring uterine bleeding long after natural or artificial menopause. Because the amount of blood lost is disabling, and assuming that the patient has not taken estrogens, a hysterectomy should be performed. This should be carried out abdominally because the previous operation revealed extensive endometrial transplants and also because any ovarian tissue which may have been left behind must be removed. The uterus should be opened during operation; if carcinoma is present radiation therapy will have to be started soon after operation. Of course, a histologic examination should be made of all tissue removed.

TREATMENT OF SCLERODERMA

To the Editor:—What are the indications for starting treatment with dihydrotachysterol when a patient has scleroderma?

Ben Raney, M.D., Linton, Ind.

ANSWER.—Many physicians are skeptical about the value of a specific treatment for scleroderma, particularly for generalized progressive scleroderma, to which this query presumably refers. The drugs usually used are vasodilators, such as prostigmine or histamine and bismuth and thyroid substance, in addition to supportive measures. Because some cases of generalized scleroderma appear to be linked to parathyroid dysfunction, the use of dihydrotachysterol is suggested. Bernstein and Goldberger (*THE JOURNAL*, March 2, 1946, p. 570) reported on its successful use in a patient in whom scleroderma developed after thyroid-

ectomy. Other physicians fail to notice benefit from the use of dihydrotachysterol, and they suggest that the favorable results occur in cases of scleroderma-like changes which may appear as sequelae to vascular disease. The use of dihydrotachysterol would seem to be justified in a disease for which there is no other specific treatment. One must be cautious and check the blood periodically for excess of calcium during the administration of this drug. Recently (abstracted, *THE JOURNAL*, September 27, p. 252) there was a report of a favorable response from treatment with "promin" in several cases of scleroderma from which an organism thought to be a mycobacterium was recovered.

SUPRACONDYLAR FRACTURES

To the Editor:—In the treatment of patients with supracondylar fractures of the humerus some authors recommend supination of the forearm in applying the cast after reduction. What is the acceptable position after reduction?

Michael F. Volpe, M.D., Brooklyn, N. Y.

ANSWER.—Supination of the forearm is the desired position after reduction of supracondylar fracture of the humerus in applying a plaster splint.

The act of reduction involves traction on the forearm and slight overextension at site of fracture during this traction, followed by flexion, still maintaining traction, to bring the long axis of the forearm directly over that of the arm. Therefore the forearm is handled better in supination and this position puts an equal pull on the lateral ligaments of the elbow joint, which in the usual case are not torn and still have attachment to and pull on the small displaced distal fragment of the humerus. This, backed by pressure of the triceps tendon behind, insures reduction. If the elbow joint is held in flexion during the healing, as it is in the average instance, it may stiffen a little temporarily. Supination is much to be preferred even with slight stiffening because that position of the forearm is the most difficult to regain and is the most useful for function.

SPRAYING THE NOSE WITH BORIC ACID

To the Editor:—Will the daily spraying or insufflation with powdered boric acid be harmful to the tissues and mucous membrane of the nasal passages and sinuses?

M.D., Texas.

ANSWER.—The daily spraying or insufflation with powdered boric acid is likely to interfere with the important function of the cilia and mucous blanket. This is a self regulating mechanism and is highly efficient.

Any foreign particle on the nasal and sinus mucous membrane is swept along by the cilia and is ultimately eliminated through any given sinus ostium or (if already in the nasal fossa) down the nasopharynx, or it may be blown out through the anterior nares.

There would be no point in spraying or insufflating boric acid powder, since the nose is a self cleansing mechanism and contains all the necessary structures with which to protect the deeper tissues from becoming more easily involved in any given infection.

MORPHINE ADDICTION

To the Editor:—1. Can morphine addiction simulate organic pain so closely that the patient is addicted to morphine but sincerely and honestly does not know it? 2. Can meperidine hydrochloride ("demerol hydrochloride" N.N.R.) do this same thing as morphine? M.D., New York.

ANSWER.—A person using morphine to the point of physical dependence has pain when the dosage is discontinued or drastically reduced. If there is also some preexisting source of pain, this will of course be severer. The questioner presumably uses the word "addicted" in the sense of "having physical dependence." If he does, one occasionally encounters addicts who know nothing about physical dependence; if they have never been withdrawn from morphine they may not understand the significance of the pains and other manifestations of this syndrome. The use of morphine does not produce pain; its withdrawal does.

The situation as to "demerol" is somewhat similar; its abstinence syndrome, however, is not as severe as that of morphine.

Addicts, in an attempt to obtain morphine, may "simulate" pain. This has also been found among nonaddicts. In the case of an addict with definite withdrawal manifestations, too great a tendency to assume that he is simulating may result in a fatality.

CARBONATED BEVERAGES

To the Editor:—I would like to know something of the composition of the drink variously known by such names as "soda water," "seltzer," "club soda" and "charged water." Are those which are made artificially a simple solution of carbonic acid and water? Are there electrolytes such as sodium or potassium in the solution? Is there any variation in composition? Are the various carbonated beverages, such as gingerale, merely an addition of a syrup to such a solution?

M.D., New York.

ANSWER.—Charged water, club soda, seltzer, soda water and sparkling water are names designating carbonated water which, when iced, is suitable for consumption. Most of such carbonated waters are prepared from filtered water by the addition of carbon dioxide. No attempt is usually made to provide a particular mineral content. Some manufacturers use distilled water to which a small amount of alkaline buffer is added prior to carbonation. The mineral content of carbonated waters varies somewhat with the source of the potable water employed in their manufacture, but the salts present are generally considered to be insignificant in contrast to the so-called "mineral waters." The usual carbonated beverage consists of a carbonated water to which sugar and a suitable, palatable flavor is added.

TREATMENT OF STATUS ASTHMATICUS

To the Editor:—In *Queries and Minor Notes* of September 27, page 259, discussion on the treatment of status asthmaticus appears in which the author warns against the use of morphine and meperidine as well. The statement is made: "Meperidine has a similar action (referring to morphine) and, until experience with its use is much greater than it is at present, it should not be used in severe asthma." I agree with the warning against morphine, but believe that the effects of ordinary doses of meperidine on the respiration are negligible and that unless used in conjunction with sedative doses of the barbiturates, significant depression of the respiration in bronchial asthma does not take place. When a patient is refractory to aminophylline, the need for other drugs that produce bronchial relaxation is a real one. Of these, the most useful appears to be meperidine administered in dosages of 30 to 75 mg. at six or eight hour intervals for a period of four to six days. The drug should not be used in combination with heavy doses of barbiturates, as all of them in excessive amounts depress the respiration. The danger of addiction should be recognized but not overemphasized. (Barach, A. L.: *Physiological and Antibiotic Therapy of Bronchial Asthma*, Conn. State Med. J. 11: 819, (1947). References which concern the view expressed are listed: Grollman, A. and Slaughter, D.: *The Pharmacology and Therapeutics*, Philadelphia, Lea & Febiger, 1947, p. 369; Batterman, R. C. and Mulholland, J. H.: *Arch. Surg.* 46: 404 (March) 1943; Curry, J. J.: *M. Clin. North America*, 30: 1138 (Sept.) 1946; Glaser, J.: *Am. Pract.* 1: 185 (Dec.) 1946; Gottschalk, R. H.: *Am. J. Obst. & Gynec.* 52: 651 (Oct.) 1946, and Taylor, E. S.: *Northwest. Med.* 45: 740 (Oct.) 1946.

Alvan L. Barach, M.D., New York.

To the Editor:—To the answer concerning the treatment of status asthmaticus in *The Journal*, September 27, page 259, the following additions and changes are indicated according to my experience. Immediate consideration of the possible specific causes, so necessary in every case, was not mentioned. Symptomatic treatment is increasingly effective as the causes of the asthma are controlled. My experience stresses the frequency of food and inhalant allergy and the rarity of drug and especially bacterial allergies and so-called intrinsic asthma.

Food allergy must be assumed in all cases of bronchial asthma which obviously are not due to seasonal pollen allergy or to some obvious animal emanation or other inhalant allergy. To study and control possible allergy to food, diet trial is usually necessary because of the well recognized fallibility of the skin test in this type of sensitization. For such trial my cereal-free elimination diet (Rowe, A. H.: *Elimination Diets and the Patient's Allergies*, Philadelphia, Lea & Febiger, 1944) has proved of increasing value. Until appetite returns the food in the diet can be served in a liquid, soft or pureed form. If vomiting is present 5 per cent dextrose in isotonic sodium chloride solution or water, as indicated by sodium chloride and fluid requirements, must be given by vein.

To consider inhalant allergy the patient should be in an environmentally controlled hospital room or in one similarly prepared at home. If allergy to pollen or air dust is suspected, a pollen filter should be in the window. If oxygen is required the air and oxygen in the tent are relatively free of pollen and dust, especially if dustproof covers are on the pillows and mattress.

The symptomatic control should use epinephrine in 1:1,000 dilution hypodermically. If it is not effective aminophylline by vein, every six to twelve hours, should be given. Iodides by mouth may be helpful. Intravenous fluids and oxygen must be given when required. Opium and sedatives are contraindicated in all cases. When death occurs in patients with bronchial asthma, they have usually received a sedative and adequate early attention has not been given to the control of the probable causes.

Epinephrine in 1:100 dilution by inhalation, ephedrine and aminophylline by mouth, and less frequently diphenhydramine ("benadryl") or triphenylamine ("pyribenzamine") by mouth, help moderate symptoms after the intractable state has been relieved.

Finally, it is important to realize that food and inhalant allergens remain in the body for days and in decreasing numbers for longer periods, necessitating the continued use of the elimination diet and residence in allergen-free environment, at times for five to fourteen days before definite evidence of improvement occurs.

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CERVICAL CYTOLOGY IN DIAGNOSIS OF EARLY CANCER

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Study of exfoliated squamous cells from the uterine tract in health and in disease opens up weirdly fascinating and provocative avenues of approach to cancer research.

It seems important at the outset to differentiate between the "diagnosis of early cervical cancer" and the term "early diagnosis of clinical, cervical cancer." There is evidence tending to prove that early cancer is a microscopic and preclinical entity, whereas one usually thinks of cervical cancer as a clinical entity. Early clinical cancer is a rare finding. It is most seldom that one sees such a thing in gynecologic practice, and there seems to be a big gap between the so-called normal cervix and clinical, cervical carcinoma, which is still such a formidable disease.

The detection of cells with atypical nuclear structure scraped from clinically normal cervixes leads to the belief that even though the epithelial surface may be intact, metabolic changes are taking place in the cell in association with the development of nuclear structure characteristic of cancerous growth. Such a lesion may not become clinically apparent until some acceleration of growth accompanies invasiveness, ulceration develops and clinical carcinoma appears.

The early stage of cervical cancer, then, is rare chiefly because of its insidious character, because it does not declare itself by producing symptoms, because the lesion is invisible and because the disease is a pre-clinical, microscopic entity at this stage.

How large must a cancer be before it may be diagnosed as such? Most clinical cancer is not early, even though it may be small, and so long as one has to depend on visual recognition for diagnosis, treatment is going to meet the same frustration as at present.

What constitutes early cancer? Modern theories indicate that early cancer represents specific changes in cell metabolism, cell behavior and cell structure.

Medical science has not yet provided the means of detecting a metabolic change indicating cancer, and the basic method of diagnosing cancer has been through the recognition of morphologic changes in tissue biopsies. These changes have constituted, first, morphologic and nuclear changes of a specific character and, second, invasiveness. Through a study of these two

phenomena the pathologist has been able to predict with great accuracy the subsequent behavior of a cell or a lesion.

In recent years, Papanicolaou's¹ important discovery of cancer cells in the vaginal secretions has focused attention on the structure of the individual cell as a method of detecting cancer. While cytologic methods lack the ability of assessing invasiveness, an abundance of scientific evidence is accumulating, through the work of Papanicolaou,¹ Meigs and Graham,² Jones,³ Warren,⁴ Seibels⁵ and others, to prove that recognition of specific morphologic cell changes enables detection of cancer.

Routine cytologic tests on all our patients have given interesting results. Careful searching of the squamocolumnar junction by serial sections in cervixes desquamating cells of abnormal structure is leading to the diagnosis of minute preinvasive lesions. The detection of altered cell structure in such lesions enables a prognostication that they will ultimately become invasive and malignant if untreated, but they may be removed surgically with excellent chances for cure during the early stage. While not all authorities are in agreement that such nests of cells constitute an inevitable premalignant state, a great deal of evidence is being tabulated which tends to bear this out. TeLinde⁶ has collected a large group of cases showing preinvasive carcinoma in some of whom he was able to demonstrate an interval of several years before invasion occurred. He pointed out that "in none of these women was a diagnosis of cancer possible during the early stage from palpation or inspection of the cervix." Schiller,⁷ Taylor and Guyer,⁸ Knight⁹ and others have similarly reported cases in which a considerable period was known to have elapsed before clinical carcinoma developed.

Pund and Auerbach¹⁰ found 47 cases of preinvasive carcinoma in serial sections from the external os of 1,200 surgically removed cervixes. The chief symptoms were referable to other noncancerous pelvic disease. Only 28 per cent of patients had a history of intermenstrual bleeding. Gross examination of the

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Read before the Section on Obstetrics and Gynecology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

1. Papanicolaou, G. N., and Traut, H. F.: *Diagnosis of Uterine Cancer by the Vaginal Smear*, New York, Commonwealth Fund, 1943.
2. Meigs, J. V., and others: *The Value of the Vaginal Smear in the Diagnosis of Uterine Cancer*, Surg., Gynec. & Obst. 77: 449-461, 1943.
3. Jones, C. A.; Neustaedter, T., and Mackenzie, L. L.: *The Value of Vaginal Smears in the Diagnosis of Early Malignancy*, Am. J. Obst. & Gynec. 49: 159-168, 1945.
4. Gates, O., and Warren, S.: *The Vaginal Smear in Diagnosis of Carcinoma of the Uterus*, Am. J. Path. 21: 567-596, 1945.
5. Seibels, R. E.: Personal communication to the author.
6. TeLinde, R. W., and Galvin, G.: *The Minimal Histological Changes in Biopsies to Justify a Diagnosis of Cervical Cancer*, Am. J. Obst. & Gynec. 48: 774-797, 1944.
7. Schiller, W.: *Early Diagnosis of Carcinoma of Cervix*, Surg., Gynec. & Obst. 56: 210-222, 1933.
8. Taylor, H. C., Jr., and Guyer, H. B.: *A Seven-Year History in Early Cervical Cancer*, Am. J. Obst. & Gynec. 52: 451-455, 1946.
9. Knight, R. V.: *Superficial Noninvasive Intraepithelial Tumors of the Cervix*, Am. J. Obst. & Gynec. 46: 333-349, 1943.
10. Pund, E. R., and Auerbach, S. H.: *Preinvasive Carcinoma of the Cervix Uteri*, J. A. M. A. 131: 960-963 (July 20) 1946.

cervixes showed in no case any evidence of carcinoma. Microscopically the neoplasms were located near or at the junction of the squamous and columnar epithelium. Such statistics indicate that many early cancers are being missed in routine examination.

It is proposed in this study to deal chiefly with squamous cancer of the cervix, the common malignant offender. This type of cancer arises from a known localized focus, the squamocolumnar junction, according to such recognized authorities as Novak,¹¹ TeLinde and Schiller.

While the apparent invisibility of an early cancer lesion at this location undoubtedly contributes to the present persisting high mortality rate in this type of cancer, the application of cytologic methods should render this type of cancer more amenable to treatment. While a proper biopsy demands a visual lesion for localization, a cytologic test does not.

It has been amply demonstrated by the independent work of numerous investigators in a total of over 40,000 cases that on the positive side of the picture the finding of cancer cells in cytologic smears is accurate to more

cancers which were missed by cervical technics. Therefore, it would appear that selective technics and the method of scraping areas of suspicion contribute to accuracy in diagnosis and in most cases may be relied on to indicate the absence of squamous carcinoma.

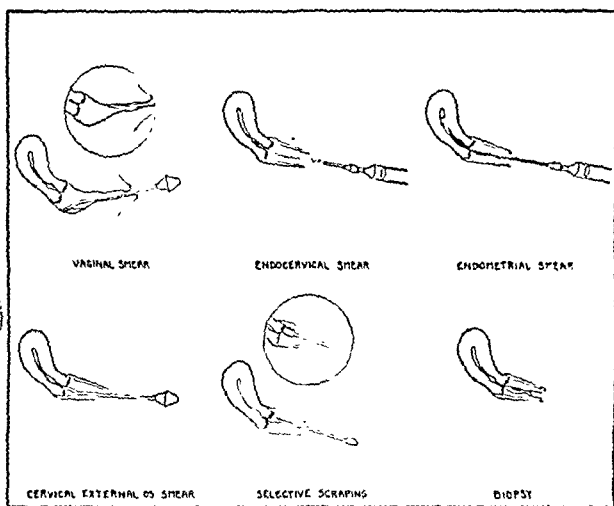
A study of the various cytologic methods (the figure) may give some indication of the degree of accuracy to be expected with the different methods. It has been my conviction that while the great facility of taking the test with the vaginal smear method is advantageous, greater time is required to locate the cancer cells. The cellular material is diluted, requiring painstaking study for diagnosis. Further, if improperly taken, the vaginal pool may be missed entirely. The vaginal smear properly taken from the posterior fornix will supply cells from all parts of the uterine tract. Co-workers and I have often found that the smear has been taken from just inside the introitus or from the roof of the vagina (see insert in the diagram of vaginal smear) rather than from the posterior fornix pool. In such cases, early lesions have been missed.

VARIOUS CYTOLOGIC METHODS (THE FIGURE)

1. *The Vaginal Smear.*—The vaginal smear taken from the vaginal pool of secretions in the posterior fornix gives an over-all picture of cells desquamated from the entire uterine tract: cells desquamated from the vagina, cervix, endometrium, occasionally from the tube and rarely from the ovary or abdominal cavity. The chief advantage of this method is the ease with which the test may be taken. Its chief limitations are: (a) Cells from an early microscopic lesion may be missed in the profuse diluted vaginal desquamata. (b) Long, painstaking study is essential for accurate interpretation. (c) A negative result cannot be relied on to indicate freedom from malignant uterine disease. (d) The finding of isolated malignant cells may present a problem in the localization of origin of these cells. This uncertainty may lead to radical surgical treatment. The insert in the figure shows a vaginal smear being taken from the roof of vagina, missing the vaginal pool.

2. *Endocervical Smear.*—The endocervical smear is advantageous in the search for a lesion in the cervical canal, and it is selective to the epithelium lining the canal. It is important to differentiate between the endocervical and the external os cervical smear. A word of caution is given in the use of this method as a "cervical smear." The cannula introduced into the cervical canal may bypass an early squamous cancer developing at the cervical portal (95 per cent) in the search for adenocarcinoma of the canal (5 per cent). Aspiration applied through the cannula, once it is in situ in the canal, will suck up cervical mucus and more of the cervical columnar cells than other cytologic methods. But it does not collect the squamous cells exfoliating at the external os in which the common cancer may be developing.

3. *Endometrial Smear.*—The endometrial smear is valuable in detecting body cancers, which constitute the largest group given a false negative diagnosis. This method must be considered a selective smear of the endometrial epithelium. Its chief advantage is: it gives a more accurate interpretation of adenocarcinoma developing in the endometrium. Its chief disadvantage is that it is not so simply obtained. It is not recommended for routine use. It is strongly recommended, however, as a secondary procedure when vaginal or cervical smears provide endometrial cells which are suspicious but indefinite.



Diagrammatic representation of various cytologic methods.

than 90 per cent in the detection of a malignant growth. There has been some doubt expressed, however, as to the value of a negative result as an indication of freedom from such disease. From an analysis of our first 3,706 cases studied for a diagnosis of cancer, the average error was 3.42 per cent. The majority of the errors made involved false positive smears. Such cases should not be regarded, however, as having produced any harmful effect, other than to require careful investigation and a cervical biopsy. On the other hand, it is a more important consideration if in the presence of a cancer a false negative smear lulls one into a sense of false security and delays the diagnosis and treatment. In our own series of 304 cancers, 5.9 per cent were missed and were near misses (suspicious only), but almost 90 per cent of them were fundal carcinomas. In other words, in cervical cancers by the use of selective methods, the common lesion was missed extremely infrequently (less than 1 per cent), even when these lesions were early and minute in size. It is my feeling that the endometrial smear, which must be considered selective to the endometrial epithelium, would have brought success in detecting those body

11. Novak, E.: Pseudomalignant and Precancerous Lesions of the Cervix, J. A. M. A. 108:1145-1151 (April 3) 1937.

4. *Smear from the Cervical External Os.*—The smear from the cervical external os is offered as an alternative to the vaginal smear. It gives the same over-all cytologic picture as the latter with the exception of the vaginal cells and secretions. Its chief advantage is that a greater concentration of cervical squamous cells are collected for interpretation of cervical carcinoma of the common type (95 per cent). This eliminates more loss of time and increases accuracy of interpretation. Its chief disadvantage is that a speculum must be used to permit the taking of the test.

5. *The Selective Scraping Method.*—The selective scraping method is midway between an aspiration smear and a biopsy. By scraping the circumference of the squamocolumnar junction of the cervix, a true "surface biopsy" of these cells may be collected prior to their actual exfoliation. All other cytologic methods except the biopsy collect cells which have already been exfoliated. The cervical scraping cannot be relied on to give an interpretation of a possible lesion in the body of the uterus. Therefore, it is recommended that the smear from the cervical external os be always taken along with the scraping in routine diagnostic practice. In the presence of a large erosion (as in the insert) the squamous epithelial margin must be scraped in its entire circumference under direct vision. The selective scraping method is, in my opinion, the method of choice for identification of early microscopic squamous cancer of the cervix.

6. *The Cervical Biopsy.*—The cervical biopsy is most selective of all the cytologic methods, as a definite segment of tissue is excised, carrying with it a large aggregation of the cells from that area. In the presence of early cancer, however, a cervical biopsy has its limitations, too. A single biopsy, depending on a visually demonstrable lesion for localization, may miss a small microscopic growth. Multiple sections through the entire circumference of the squamocolumnar junction may be required to provide the true pathologic evidence in early cancer.

COMMENT

For several years my associates and I have taken vaginal smears and smears from the external cervical os as a routine. Almost invariably, a greater concentration of neoplastic¹² cells have been found in the aspiration from the cervical os. Recently, during the past eighteen months, we have used the selective cervical scraping method in the search for early carcinoma. The greater sensitivity¹³ of this method over other cytologic technics is suggested by our results. Fifteen early cervical cancers were diagnosed using the spatula, while vaginal smears taken at the same time failed to show the cells. It would appear, then, that while vaginal and cervical smears will detect an abundance of cells in the presence of a "full blown" cancer, the selective scraping is superior in the detection of microscopic cancer developing at the squamocolumnar junction. It is our feeling that since squamous cancer of the cervix makes up 80 to 90 per cent of uterine cancer, routine methods of practice should be concentrated on early detection of this common offender. Our efforts should be directed toward applying to best advantage the most effective method of diagnosing early curable cancer.

CONCLUSIONS

Diagnosis of early cervical cancer is always a microscopic technic. Such evidence argues for a total hysterectomy if hysterectomy is being considered. It indicates more extensive treatment of cervicitis and erosion by electrocervical methods. Electroconization is recommended as a good method for diagnosis as well as treatment. Widespread use of cytology should increase the percentage of surgical cures.

The evidence argues for the advantage of an annual cytologic test by a selective method to detect early carcinoma. If, as the evidence indicates, early cancer is a microscopic disease, single biopsies, or even multiple biopsies which depend on visual demonstration for localization of site, may fail to detect the focus of growth.

Dr. Pund's series bear this out in a large group of cases. To date, we have picked out a large series of women (about 115) who show cells suggestive of carcinomatous tendencies using the spatula; yet in a surprising large number of these, single biopsies failed to detect any carcinoma. Those cases, however, which did have a complete conization and serial sections of the entire squamocolumnar junction of the cervix, yielded 36 preinvasive carcinomas and a still larger number of studies showing cells exhibiting the structure of cancer without a lesion large enough or definite enough to be labeled by the pathologist as a preinvasive carcinoma. Therefore, there was a rather large group of cases detected which were diagnosed as showing malignant tendencies or as showing a picture which has been regarded as precancerous. This group of precancers and cases showing cancerous tendencies without definite biopsies of malignant growth present a controversial group. We prefer, therefore, not to make too many claims of a specific nature regarding their malignant potentialities. In the meantime further evidence and knowledge of these cases is growing. While the end result of such cases would be interesting to know, they do warrant some treatment today, and in this type of case we have usually recommended either thorough electrocautery or removal of the diseased cervical tissue by conization. Such cases may then be followed by frequent cytologic studies, every two or three months, to detect possible tendencies toward recurrent growth.

It is our conclusion, however, that the described selective cytologic method gives a sensitive indication of growth changes in the squamous tissues in the region of the junctional area, and it may be possible simply to scrape off a beginning area of growth in tissues, leaving no further evidence to be found in the tissue biopsy. Many of us have seen cases in which the curet removed entirely small adenocarcinomas of the endometrium, leaving no further evidence of growth in the tissue sections following hysterectomy. One similar case has recently been encountered by Dr. Edwin R. Robertson of Kingston, Ontario. A small cervical carcinoma detected by cytologic scraping and confirmed by biopsy revealed no further evidence of cancer when multiple sections were studied from the surgically removed uterus.

Many of these cases showing only fragmentary cellular evidence of growth have been cases in which there was chronic cervicitis, and study of the nuclear changes in the cases of chronic cervicitis does give the impression that inflammation bears some relation to malignant growths in this organ. It is our belief, however,

12. Ayre, J. E.: A Simple Office Test for Uterine Cancer Diagnosis. *Canad. M. A. J.* 51: 17-22, 1944.

13. Ayre, J. E.: Selective Cytologic Smear for Diagnosis of Cancer. *Am. J. Obst. & Gynec.* 53: 609-617, 1947.

that other factors¹⁴ are necessary to produce morphologic changes of a malignant character in the cells.

Until a real cure for cancer is found, a yearly cytologic test offers the next best thing in diagnosis and control of uterine cancer.

ABSTRACT OF DISCUSSION

DR. CHARLES E. GALLOWAY, Evanston, Ill.: The vaginal smear technic constitutes the greatest advancement in diagnosis and cure of cancer of the uterus in the last fifty years. Dr. Ayre's technic of gently removing the surface cells of the cervix is a reasonable procedure, but it requires the introduction of a vaginal speculum, and it furnishes one with many more cell types than are found when the secretions are obtained by a pipet from the vagina. It also is somewhat questionable as to whether more carcinomas may be diagnosed in this manner than can be diagnosed by the usual vaginal technic. The diagnosis of preinvasive carcinoma is controversial to some extent, and it is hoped that there will be some deaths from epidermoid carcinoma in order to back up some of these diagnoses. As in every other new procedure in medicine, we find that the lag between discovery and application is greater than it should be. This seems to be especially true whenever some effort is needed on the part of the practitioner in order to give his patient the benefit of the present day knowledge. Papanicolaou first applied the vaginal smear technic in the diagnosis of cancer of the uterus in 1923. But after all these years only an infinitesimal number of women are receiving the benefit of this simple, inexpensive test. At present, over 17,000 women die of cancer of the uterus every year in these United States. May we not consider most of these deaths as preventable? Our chief hope for reducing this terrible mortality lies in early diagnosis, because during the past fifty years nothing has been added to our armamentarium other than radium, roentgen rays and surgery. The smear technic may enable one to detect malignant growths before they can be seen or felt, and even before they have produced clinical symptoms. But adequately trained cytologists are lacking at the present time. At present, the world over, too many false positive vaginal smears are being reported due to inadequately trained cytologists. We must therefore train men and women to become expert and reliable in their ability to recognize malignant cells, not only in vaginal smears but also in urine sediment, sputum, gastric secretions and stools.

DR. WILSON FOOTER, Oakland, Calif.: Cervical cytology is one of several aids that can be used to facilitate early diagnosis of cancer of the cervix. None of them can help if it is not used, and it will not be used until the examiner has become aware that even the normal-appearing cervix in the patient without symptoms may harbor cancer. Although cancer is present in the cervix it must at least involve the surface in order that cells be shed and a diagnosis of cancer be possible by the smear method. In one illustrative case the cervix was hard and nodular and clinically was diagnosed as cancer. The cervical smear did not contain any malignant cells. On sectioning the surface epithelium was entirely normal. Deep in the stroma the lymphatics were involved with mucin-forming adenocarcinoma, extension from a Krukenberg tumor. Cancer can be present in the cervix and not be diagnosable by this method. Studies of the second case illustrate an early cancer resembling a laceration with eversion. The smear contains malignant cells and the biopsy shows deep invasion of the stroma. The cervix in the third case resembles an eversion. Suction curettage and biopsies of both cervical lips showed no evidence of malignant growth. Malignant cells were found on aspiration, and in the removed cervix there was extensive surface carcinoma and invasion in one small area. Case 4 presents a carcinoma of the cervical canal with a lobulated sharply demarcated leukoplakia surrounding the external os. Original biopsies from the leukoplakia did not reveal the cancer, smears contained cancer cells, and subsequent biopsy of the cervical canal showed invasive carcinoma. In diagnosing early cancer of the cervix

cytologic examinations do not replace the biopsy. On the other hand, the biopsy may fail to reveal cancer, when the smear contains exfoliated cancer cells. As in 2 of the cases presented, the diagnosis of cancer was made by smears after negative biopsies. The early diagnosis of cancer of the cervix depends on complete examination even in the absence of any symptoms and the intelligent use of all of the diagnostic aids at our disposal.

DR. KARL MARTZLOFF, Portland, Ore.: It is important to stress that early cancer of the cervix has nothing about it that distinguishes it grossly from some of the other benign lesions of the cervix. The use of the curet is a modification of the selective curettage technic that has long been used. It will probably prove to be more satisfactory than the vaginal smear technic, particularly when Papanicolaou staining methods are utilized. It is regrettable that the vaginal smear is being propagandized in the lay press by members of the American Cancer Society as a diagnostic procedure. Obviously such statements are untrue and harmful. As a consequence, the time is coming when a physician will probably be subjected to the hazard of unwarranted suits for malpractice if he does not employ the vaginal smear technic. Dr. Ayre has used the term "preinvasive cancer" to describe a noninvasive carcinomatoid change. It is a dangerous term, because probably there is no one who can positively say that this lesion is destined to become an established cancer. Still the term "preinvasive cancer" presupposes just such diagnostic acumen. If such difficulties can occur with well prepared tissue carefully obtained for biopsy, it becomes evident that the vaginal smear with its scattered and unrelated elements presents even greater problems. When desquamated cells possessing the appearance of neoplasia are observed in a vaginal smear preparation, one is confronted by three questions: Are these cells truly neoplastic? If they are, do they come from a bona fide cancer or from an area of noninvasive carcinomatoid change? The first question can generally, but by no means always, be answered correctly. The last two cannot. Therefore, the "positive" vaginal smear is not diagnostic of cancer. A "negative" smear also does not exclude cancer. Most reports concerning the reliability of the vaginal smear method do not specify whether their preparations come from patients with well developed cancer where a brief history and careful speculum examination by the family physician would permit an instant and generally correct clinical appraisal, or whether their material comes from patients in whom no suspicion of cancer exists. It is a fair assumption that the former group provide the bulk of the clinical material and that the family physician and informed patient are still the answer to early diagnosis.

DR. J. HEYMAN, Stockholm, Sweden: At the gynecology clinic of Radiumhemmet in Stockholm, we see a great number of patients with cancer of the uterus. We also see a great number of patients with irregular bleeding, and a number of patients are annually referred to us suspected of having a uterine carcinoma. Sweden is a sparsely populated country, and it is easy for us to follow all the patients referred to us. And we do follow them. Since 1914, any patient of the type mentioned who was referred to us has been followed. Our follow-up is 100 per cent. It is a fact—and I think a rather surprising fact—that a carcinoma has never developed in a patient in whom we failed to diagnose the cancerous lesion on clinical examination or on biopsy. There seems to me thus to be some slight discrepancy between the experience of the cytologist and the clinician.

DR. A. E. RAKOFF, Philadelphia: The value and limitation of a cytologic method have been well enumerated. I should like to cite what our results have been in the routine application of these methods in Philadelphia, where during the past several years we have been using the vaginal smear method also as part of the routine examination given to women coming into the Health Maintenance and Cancer Prevention Detection Clinics. Prior to using this method, we undertook to study routinely 500 women as they appeared for admission to the wards of the Jefferson Hospital, taking a single set of smears (consisting

14. Ayre, J. E.; Chevalier, P. M., and Ayre, W. B.: A Comparative Study of Vaginal and Cervical Cornification in Human Subjects, *J. Clin. Endocrinol.* 7: 749-752, 1947.

of two smears) from the vagina by the method of Papanicolaou. These smears were read by several investigators who had had considerable experience with this method, who did not see the patients, who did not know the histories and who did not know the results until after the patients were operated on. Our final results gave a correlation of 94.8 per cent correct, positive and negative. However—and this I believe to be the important point—in 63 cases, positive for cancer of the uterus (57 cervical, 6 fundal), we missed 19, or 30 per cent. In the negative cases we missed only 7, or 1.6 per cent. This indicates that the percentage of missed positive cases by a single set of smears when they are taken in a routine fashion may be rather high. This we feel to be the chief limitation of this method for routine purposes. On the other hand, in going back to these cases later, or in studying similar cases in which there is suspicion of cancer, by taking repeated smears we have almost invariably been able to make a positive diagnosis. When there is no suspicion of cancer, and when therefore only one set of smears would be furnished for routine examination, we feel that the vaginal smear method has distinct limitation. More recently, since the publication of Dr. Ayre's work, we have also been taking, in selected cases, cervical and vaginal smears. In some instances we were able to find positive cervical smears, but not vaginal smears. We have also had in several instances the reverse happen; that is, a positive vaginal smear, with a negative cervical smear. For that reason we are now making it routine to take both cervical and vaginal smears to eliminate this inherent defect in the method.

DR. J. ERNEST AYRE, Montreal, Canada: The comparison of the various methods of obtaining smears is important. Since we are dealing with minute elements as small as cells, we are working in a field where precision is extremely important, and I think that for successful and accurate cytologic diagnostic results, it is essential that precision be exercised in three different departments: (1) in the method of taking the smear; (2) in the staining with Papanicolaou's stains, and (3) in the interpretation by one who is familiar with cancer cytology and normal cytology. So far as the method of taking the smear is concerned, the vaginal smear, of course, has the great advantage of being easily taken. At the same time, its very ease perhaps renders it susceptible to error in that a nurse unfamiliar with the method, or even the patient, may take the test and may aspirate secretion from the roof of the vagina. Often we found that the smear was taken from just inside the introitus, missing the vaginal pool. I think that such errors perhaps account for some of the limitations of the method that Dr. Rakoff spoke of finding. In our own experience we have had a number of cases in which we failed to find the cells in the vaginal aspiration, whereas we did find them in high concentration in the selective cervical scraping. Vaginal smears will show cancer cells in clinical cancer but it takes longer to find them than in the more concentrated cervical smear. The selective scraping is, in our experience, the method of choice for detection of preclinical cancer. In order to increase the efficiency of the cytologic method, it is worth the extra trouble of inserting a speculum and going directly to the point of origin of the squamous cells which we want to examine. In this way we obtain a selective cell test for the common type of cervical cancer which will tend to increase the accuracy of the method and save more lives through earlier diagnosis.

Rupture of Interventricular Septum.—The clinical diagnosis of rupture of the interventricular septum is based on the sudden appearance of a loud systolic murmur, best heard over the fourth and fifth intercostal spaces to the left of the sternum following myocardial infarction. On occasion, a thrill can be palpated over the same areas. Furthermore, this systolic murmur becomes harsher with time. Auriculoventricular conduction defects are rarely present in this condition, and the electrocardiographic tracings show changes consistent with myocardial infarction, and right ventricular strain. The period of survival after the accident may vary from a few hours to eight months.—Rivera-Diaz, R. S., and Miller, A. J.: Rupture of the Heart Following Acute Myocardial Infarction. *American Heart Journal*, page 126, January 1948.

CEREBRAL ARTERIOGRAPHY IN SUBARACHNOID HEMORRHAGE

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and

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Despite the fact that the clinical diagnosis of spontaneous subarachnoid hemorrhage is comparatively easy to make and the pathology of the syndrome is fairly well understood, there still are enough gaps in our knowledge to justify further investigation of the subject. There are, indeed, a number of excellent reviews of both the clinical and pathologic aspects of the syndrome, but the statistics on the former are sometimes misleading and the studies of the latter are not always conclusive. Often one can make clinically the diagnosis of ruptured cerebral aneurysm, and not infrequently one may venture a correct opinion as to localization based on clinical signs and symptoms. But aneurysm is not the only cause of spontaneous subarachnoid hemorrhage, and necropsy does not always reveal it even when it is. Martland,¹ basing his views entirely on postmortem studies, stated:

We believe that most of those cases of spontaneous subarachnoid hemorrhage which recover (fifty per cent, according to some clinicians) are probably not due to "leaking" or ruptured intracranial aneurysms, but rather to some unexplained infection or some as yet unknown cause. There is little anatomic proof that intracranial aneurysms leak, rupture and heal, or bleed at various intervals, and less proof that intracranial aneurysms may become thrombosed and disappear.

Whether or not necropsy always reveals the cause of the hemorrhage, a diagnosis after death is admittedly of little help to a patient and not much of a guide to his treatment. The diagnostic reasoning in most cases of spontaneous subarachnoid hemorrhage has always been, and largely still is, circular in type and repetitious in effect. Some neurologists continue to rely on repeated lumbar puncture; most, including ourselves, do not; but nearly all have hitherto pursued what is known as conservative treatment. Obviously conservative treatment is no treatment at all and merely is a euphonious justification for doing nothing, while expectant treatment means waiting for the patient to die or to get well without even the benefit of effort at treatment. We believe that much of the uncertainty as to diagnosis and prognosis can be dispelled by cerebral arteriography. In a number of cases it provides definite indications for successful treatment and in some may lead to the prevention of recurrent bleeding. The method, then, can be not only of diagnostic but also of therapeutic importance.

After the introduction of arteriography by Moniz,² both practical and theoretical objections were raised by many. The theoretical ones refer to the danger of the method itself. On the basis of our own experience we can say with assurance, after employing the diagnostic method both in the acute and subacute stages of subarachnoid hemorrhage, that the injection itself for the visualization of the arteries is a safe procedure. We have observed no untoward complications in any of our cases. The practical objection to "thorotrast"

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1. Martland, H. S.: Spontaneous Subarachnoid Hemorrhage and Congenital "Berry" Aneurysms of the Circle of Willis, *Am. J. Surg.* 43: 10 (Jan.) 1939.

2. Moniz, E.: L'angiographie cérébrale, Paris, Masson & Cie, 1934.

(colloidal thorium dioxide) is valid. "Thorotrast" is a radioactive substance, and its deleterious effects persist because it is not excreted. With the introduction by Gross³ of "diodrast" (iodopyracet), which is non-radioactive and is rapidly excreted, arteriography can now be carried out with safety, and even multiple or

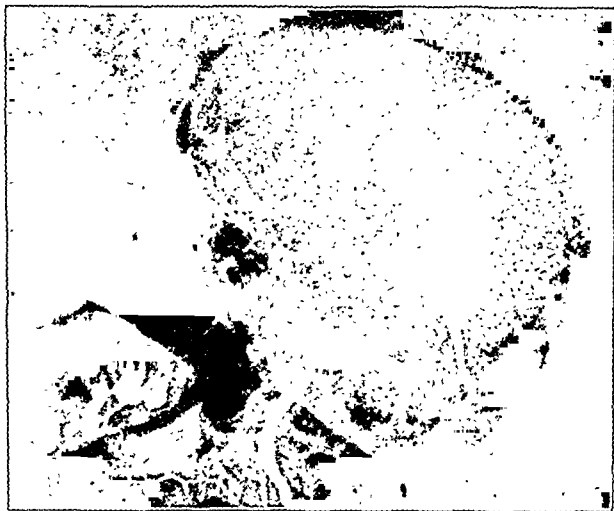


Fig. 1 (case 1).—Vascular malformation in left frontoparietal area.

repeated injections may be made with impunity. Since we began to use "diodrast" for arteriography in 1939, for the study of subarachnoid hemorrhage and the investigation of cerebral vascular lesions without hemorrhage, we, as well as others,⁴ have extended the use of cerebral arteriography as a diagnostic method. Recent studies of brain tumors have demonstrated the value of the method in conditions other than vascular anomalies. The cases about to be described illustrate, we believe, the diagnostic value of visualizing by means



Fig. 2 (case 2).—Diffuse vascular malformation in right parieto-occipital region.

of arteriography the nature of some of the vascular anomalies or aneurysms causing subarachnoid bleeding and the indications for arterial ligation, brain exploration or roentgen treatment.

REPORTS OF CASES

This paper deals with 10 cases of subarachnoid hemorrhage in which arteriography was performed during the acute or subacute phase.

CASE 1.—*Vascular malformation of the left frontoparietal area with repeated attacks of subarachnoid bleeding.*

S. C., a white woman aged 30, was hospitalized eight years before in another institution, where the diagnosis of subarachnoid hemorrhage was made. She was unconscious for seventy-two hours at that time and had right hemiplegia. She was admitted to the Mount Sinai Hospital for the first time on Aug. 26, 1939. Four days previously, while in apparent good health, she suddenly became comatose, and right hemiplegia and rigidity of the neck developed. The cerebrospinal fluid was frankly bloody. She gradually improved on bed rest and was discharged on Oct. 26, 1939. At home she complained of headache and right-sided seizures. On Oct. 1, 1941 she began to vomit and became drowsy, and her neck became stiff. She was readmitted four days later with a right hemiplegia and aphasia. The spinal fluid contained 40,000 red blood cells per cubic millimeter. On Nov. 21, 1941 left cerebral arteriography demonstrated a vascular malformation in the left frontoparietal area (fig. 1). The left common carotid artery was ligated



Fig. 3 (case 3).—Vascular malformation in right posterior parietal area.

and she improved. She was seen in the follow-up clinic up to Dec. 14, 1944, and she had no further attacks of subarachnoid hemorrhage.

Comment.—This patient had several attacks of subarachnoid bleeding, each with right hemiplegia and aphasia. Arteriography demonstrated a vascular malformation in the left frontoparietal area. She was observed for three years after ligation of the common carotid artery. During this period no attacks of subarachnoid bleeding occurred.

CASE 2.—*Vascular malformation in the right parieto-occipital area.*

L. K., a white woman aged 43, was admitted to the hospital in 1946 with the history of repeated episodes of subarachnoid hemorrhage since the age of 8. She had five previous admissions to Mount Sinai Hospital, each time because of sudden onset of headache, stiff neck, photophobia and vomiting. On this, her sixth admission for the same complaints, she had, in addition, left central facial weakness and a Babinski sign on the left. Lumbar puncture showed xanthochromic fluid under a pressure of 195 mm. Right cerebral arteriography done on Jan. 11, 1946 disclosed a vascular malformation in the right parieto-occipital area (fig. 2). Radiotherapy was given. The patient remained fairly well up to June 2, 1946, when she had another typical attack of subarachnoid bleeding, from which she slowly recovered.

3. Gross, S. W.: Cerebral Arteriography in the Dog and in Man with a Rapidly Excreted Organic Iodide, *Proc. Soc. Exper. Biol. & Med.* 42: 258, 1939.

4. List, C. F., and Hodges, F. J.: Intracranial Angiography, *J. Neurosurg.* 3: 25, 1946.

Comment.—The carotid artery was not ligated in this case since the lesion was not noted in the wet roentgen film. A course of radiotherapy did not prevent subsequent subarachnoid bleeding.

CASE 3.—*Vascular malformation with sudden onset of subarachnoid bleeding.*

B. S., a white woman aged 40, had been in good health except for migraine of many years' duration. She had had mild hypertension since the age of 37. In September 1946, she was suddenly seized with severe pain above the right eye, followed by vomiting. Two days later left hemiplegia developed. Within a few days she became confused, restless and incontinent of urine and feces. On admission to the Mount Sinai Hospital she was apathetic but facetious. She had left hemiparesis, left homonymous hemianopsia and bilateral choked disks. The spinal fluid showed xanthochromic fluid. Roentgen examination of the skull showed displacement of the pineal gland to the left, and the electroencephalogram indicated a neoplasm in the right posterior temporal region. The patient slowly improved during the next three weeks. On Dec. 10, 1946 a right cerebral arteriogram disclosed an extensive vascular malformation in the right



Fig. 4 (case 4).—Vascular malformation in left parieto-occipital area.

posterior parietal area (fig. 3). The right common carotid artery was ligated. At the time of discharge, Dec. 22, 1946, she was greatly improved. The fundi were normal. When seen in March 1947, she was well.

Comment.—In this case the history suggested a ruptured aneurysm of the circle of Willis while the roentgenograms and electroencephalogram favored a tumor. Arteriography demonstrated a large vascular malformation.

CASE 4.—*Malformation in right parieto-occipital area with acute subarachnoid hemorrhage.*

S. C., a white woman aged 30, had one previous attack of subarachnoid hemorrhage; she was comatose for several days but eventually made a good recovery. In September 1946 she had one generalized convulsion, followed by right-sided headache, and on Jan. 14, 1947 a second one. She was readmitted to the Mount Sinai Hospital the following day. At this time there were no neurologic abnormalities. The spinal fluid was clear and colorless. An electroencephalogram showed diffuse 6 per second activity. A right cerebral arteriogram (fig. 4) revealed a vascular malformation in the right parieto-occipital area. The right common carotid artery was ligated. The patient was discharged on Jan. 31, 1947. She has remained well except for two generalized seizures which occurred when she failed to take diphenylhydantoin sodium.

Comment.—The original clinical diagnosis was ruptured cerebral aneurysm, but the arteriogram showed a vascular anomaly.

CASE 5.—*Capillary hemangioma of the left occipital area.*

M. R., a white man aged 37, was in good health until seven weeks before admission, when he had a sudden attack of vomit-

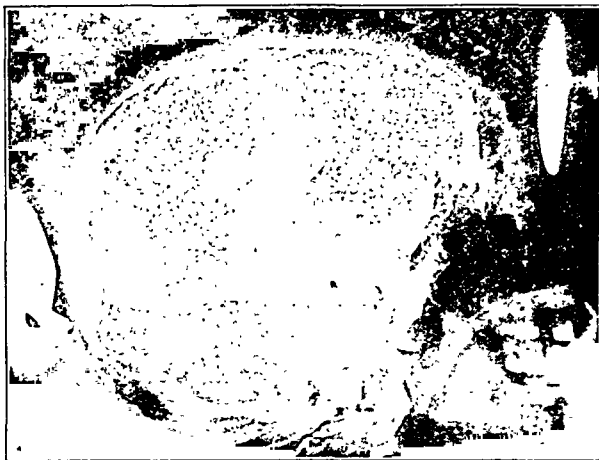


Fig. 5 (case 5).—Capillary hemangioma in left occipital area

ing and loss of consciousness for a few hours, followed by further vomiting, violent headache, rigidity of the neck, dizziness and drowsiness. A lumbar puncture done at another hospital yielded a grossly bloody fluid under increased pressure. He was admitted to the Mount Sinai Hospital on Jan. 29, 1947, seven weeks after the initial attack. The neurologic examination at this time showed no abnormalities. The spinal fluid was colorless; there were no cells, and the total protein was 86.5 mg. per hundred cubic centimeters. The electroencephalogram showed a large amount of diffuse symmetric activity, 4 to 6 per second without focal accentuation. Right cerebral arteriography showed no abnormalities. Left arteriography, done a few days later,



Fig. 6 (case 6).—Aneurysm of left internal carotid artery at junction of posterior communicating artery.

showed a telangiectatic malformation in the left occipital area (fig. 5). High voltage roentgen therapy was given, and two months later the patient was free of headache and dizziness.

Comment.—As the vascular abnormality was not recognized in the wet roentgen film, the common carotid artery was not ligated, but when the lesion was seen to consist of small vessels, which appeared to be radiosensitive, roentgen therapy was instituted.

CASE 6.—Supraclinoid aneurysm with subarachnoid hemorrhage.

R. G., a white woman aged 33, had a sudden attack of pain in the back of the head; two days later a complete left third nerve paralysis developed. Four weeks afterward she suddenly became unconscious and had bloody spinal fluid. After three weeks' hospitalization she improved generally, but the left third nerve paralysis persisted. In addition to diplopia she complained of pain around the left eye. An arteriogram done Aug. 14, 1946 showed a supraclinoid aneurysm probably arising at the junction of the internal carotid and posterior communicating artery (fig. 6). The left common carotid artery was ligated. The third nerve paralysis slowly improved, and the pain around the eye disappeared. She has remained in good health up to the present time.

Comment.—The pain in the eye, which pointed to involvement of the ophthalmic branch of the trigeminal nerve, and the oculomotor paralysis left no doubt that the bleeding was due to rupture of an aneurysm of the anterior portion of the circle of Willis.

CASE 7.—Supraclinoid aneurysm with severe subarachnoid bleeding.⁵

M. W., a Negro woman aged 23, began to have severe occipital headache on Jan. 25, 1947. The next day she became drowsy, vomited several times and was admitted to the hospital.



Fig. 7 (case 10).—Vascular malformation in left parietal area.

Examination showed rigidity of the neck and a bilateral Babinski sign. The spinal fluid was grossly bloody. On Feb. 3, 1947, she had a generalized convulsion. She seemed to improve slowly up to Feb. 13, 1947, when she had another convulsion followed by a left hemiplegia with forced deviation of the eyes to the right, and stupor. Arteriography done on February 22 showed a berry aneurysm near the bifurcation of the right internal carotid artery. The right common carotid artery was ligated. She continued in stupor, but spinal puncture showed no evidence of new bleeding. On February 26 a craniotomy was done. The aneurysm was found springing from the middle cerebral artery near its junction with the internal carotid artery. A silver clip was placed around the base of the aneurysm. The patient improved temporarily. She became less stuporous and began to take food by mouth. While apparently doing well she took a sudden turn for the worse; she died March 23, almost one month after intracranial ligation of the aneurysm. Autopsy was not permitted.

Comment.—This patient was in poor condition from the onset of her illness. After ligation of the common carotid artery in the neck there was no further evidence of fresh bleeding.

5. This case and the next one are from the service of Drs. Savitsky and Gross at the Lebanon and Morrisania hospitals.

CASE 8.—Subarachnoid bleeding with large intracerebral clot.

W. T., a white man aged 39, had had a head injury without loss of consciousness nine months previous to his hospital admission on March 26, 1947. After the head injury he became forgetful and irritable but otherwise seemed well. On the day of admission a left hemiplegia suddenly developed with twitching of the left side of the face. He complained of severe right-sided headache, became drowsy and finally unconscious. Just before admission he had a severe generalized convulsion. The spinal fluid was grossly bloody under a pressure of 360 mm. He had a stiff neck, conjugate deviation of the eyes to the right, left homonymous hemianopsia and a left hemisensory syndrome. The fundi showed early choked disks. On April 12, a right cerebral arteriogram was done, followed by a right subtemporal decompression and evacuation of a large intracerebral hematoma from the right temporal lobe. After this the patient's mental condition and eye signs improved rapidly. Spastic paralysis of the left upper extremity persisted (as of May 20, 1947).

Comment.—Although the aneurysm was not demonstrated in the arteriogram we believe that the patient had an aneurysm of the right middle cerebral artery which burrowed in the temporal lobe and finally ruptured.

CASE 9.—Aneurysm of right internal carotid artery near its bifurcation, with severe subarachnoid bleeding.

S. R., a white woman aged 28, had been in good health except for periodic migraine. On March 24, 1947, she suddenly became dizzy and rapidly lost consciousness. For a few days prior to this episode she had pain above the right eye and drooping of the right eyelid. She was admitted to the hospital, almost in a moribund state. Her pupils were widely dilated, all four extremities were weak, and the blood-pressure was 80 systolic and 50 diastolic. The spinal fluid was grossly bloody under a pressure of over 600 mm. Within twelve hours she improved slightly, but the temperature was 103 F. and her neck was rigid. On March 27 a left hemiplegia was noted. On March 30 she sank into deep coma. The spinal fluid was still grossly bloody. Arteriography disclosed an aneurysm of the right internal carotid artery near its bifurcation. The right common carotid artery was ligated. The patient remained comatose and died ten hours later.

Comment.—This patient was almost moribund from the onset of her first attack of subarachnoid bleeding. She would have died even if arteriography and carotid ligation had not been done.

CASE 10.—Multiple vascular malformations of the brain.

S. G., a white youth aged 17, was admitted to the hospital on Oct. 5, 1939.

Past History: The patient's birth was normal; he did not talk until the age of 5, and is said to have had "poliomyelitis" at the age of 5½, followed by weakness of the left upper extremity. In 1938 he had a generalized convulsion. In September 1939 sudden weakness of the right upper extremity developed and he became stuporous. On admission he showed a right hemiplegia, right hemihypesthesia, right astereognosis, bilateral choked disks, rigidity of the neck and a pulse of 54. Lumbar puncture showed xanthochromic fluid with crenated red blood cells under a pressure of 480 mm. Left cerebral arteriography on Oct. 9, 1939, showed a vascular malformation in the left parieto-occipital region. A left subtemporal decompression was done and the cerebral veins in the exposed area appeared greatly enlarged. The patient's condition began to improve rapidly. Radiotherapy was started on Oct. 19, 1939. The patient continued to improve. On Nov. 28, 1939 the fundi were normal. He remained well until March of 1943, when he began to have jacksonian seizures involving the left hand, but he continued to work up to May 15, 1946, when he was readmitted to the Mount Sinai Hospital. On examination a bruit was heard over the left temporal region. A left arteriogram showed a vascular malformation in the parietal area (fig. 7). The common carotid artery was ligated, and though

the bruit persisted it was less intense. Because of a sudden episode of loss of speech in October 1946, he was given radiotherapy, and he improved once more.

Comment.—The patient evidently had bilateral vascular malformations of the brain. What was diagnosed at the age of 5½ as poliomyelitis probably was a subarachnoid hemorrhage. Twelve years later he had another subarachnoid hemorrhage, this time with right hemiplegia. Arteriography, subtemporal decompression and radiotherapy were followed by recovery. When jacksonian seizures set in and a bruit was detected arteriography was done again. In retrospect, a right arteriogram should have been made, since a previous left arteriogram already had demonstrated the vascular anomaly on the left side.

COMMENT

The statement frequently made that spontaneous subarachnoid hemorrhage generally is the result of rupture of a cerebral aneurysm,⁶ especially of the circle of Willis, is not borne out by our observations. These cover a larger number of cases than are recorded in this paper. Of the rather small series of 10, 6 were the result of vascular malformations demonstrated by arteriography, and only 4 of aneurysms. In 3 of the latter the aneurysms were near the bifurcations of the carotid, and in the fourth the aneurysm was presumed to have burrowed into the temporal lobe, where it ruptured and caused a large intracerebral hemorrhage.

Three of the patients in our series of cases who had several recurrent episodes of subarachnoid bleeding were found to have vascular malformations. The 3 others with vascular malformations were observed during their initial attack or shortly thereafter. It seems to us that recurrent subarachnoid hemorrhages with recovery, with or without sequela, are more likely to be the result of vascular malformations than of aneurysms. Aneurysms are more likely to be fatal during the first attack or the second, unless successful ligation can be carried out after demonstration by arteriography. Since the symptoms of subarachnoid hemorrhage are mainly general and the clinical signs essentially meningeal, it is usually difficult to state with assurance either the nature or the location of the lesion. Visualization of the arteries is the only method of making the diagnosis certain. For the first time a method is available which provides definite therapeutic indications, be they arterial ligation, intracranial exploration or deep radiation.

Ligation of the common carotid artery on the side of the lesion was done in 4 patients with vascular anomalies; 2 others were treated by radiation. In 3 patients with aneurysms the common carotid alone was ligated; in the fourth intracranial ligation was done in addition. The reason for ligating the common carotid and not the internal carotid is that it is safer. The circulation is reduced only about 50 per cent and no preparation, such as gradual compression of the artery, is necessary. Also, there is little danger of convulsions or hemiplegias. The 2 patients who died after ligation were practically moribund, and it was felt that they would not have survived anyway. The arteriography and the ligation were measures of last resort in both of them. Exploration was done only once in a patient with a vascular anomaly,

because we were of the opinion that intracranial exploration did not offer much, whereas arterial ligation or high voltage radiation promised considerably more.

As to recurrences, all patients who had ligations for cerebral vascular malformations have so far had no subsequent attacks of bleeding. Two of the cases are rather recent, so that one cannot speak with absolute assurance as to recurrence in them. In 1 case of vascular malformation, in which treatment was by radiation but without ligation of the carotid, there were two recurrences. This was one of our early cases, when our experience was limited. The wet roentgen plate was not properly interpreted at the time. Afterward ligation was not done for other reasons, which we do not now regard as valid.

The question of when to do an arteriogram and when to ligate the artery perplexed us a great deal at first. In our inexperience we were afraid to do an arteriogram immediately after the hemorrhage occurred or in the acute stage, and the procedure was deferred for weeks and weeks. Then when the patient recovered it was not done either because the patient refused to have it done or we hesitated too long. As the technic was perfected and skill in reading films increased, and as we learned that arteriography was both simple and safe, we ventured to do it earlier and earlier until now we no longer hesitate to do it in the very acute phases of the hemorrhage.

SUMMARY

Many cases of spontaneous subarachnoid hemorrhage, especially with focal lesions, are the result of vascular malformations rather than aneurysms. Recurrences are more likely to occur in vascular malformations. Ruptured cerebral aneurysms are more apt to cause death in the first or second attack.

Only visualization by arteriography can make certain either the location or the nature of the lesion in most of the cases. Arteriography is not only a diagnostic method but a reliable guide to treatment. It is a simple and safe procedure.

Ligation of the common carotid carries practically no risk with it. Surgical treatment, whether ligation alone or in combination with deep radiation, will prevent recurrence in many cases.

His Father Was a Physician.—Adolph Kussmaul was born in 1822 at Graben, near Karlsruhe, Germany. His grandfather had been a military barber-surgeon and his father was a physician. Kussmaul received his medical education at Heidelberg and then settled down as a country practitioner. Serious illness, however, compelled him to abandon medical practice. He taught at Heidelberg from 1855 to 1859, when he accepted the chair of internal medicine at Erlangen. In 1863 he accepted a similar position at Freiburg. Kussmaul was instrumental in initiating a new scientific movement that was to become of great importance in the development of clinical medicine. This was the idea of functional diagnosis, according to which information regarding the early stage of an affection of an organ could be obtained by testing its functions. In 1876 Kussmaul became professor at Strassburg, where he remained until his retirement in 1888. Such time as he could spare he devoted to his autobiography, "Reminiscences of the Youth of an Old Doctor," and the unfinished sequel "A Teacher in Heidelberg."—Rosen, George, and Caspari-Rosen, Beate: 400 Years of a Doctor's Life, New York, Schuman's, 1947.

6. Richardson, J. C., and Hyland, H. H.: Intracranial Aneurysms, *Medicine* 20:1 (Feb.) 1941.

SPONTANEOUS SUBARACHNOID HEMORRHAGE OF ANEURYSMAL ORIGIN

Factors Influencing Prognosis

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Morgagni¹ of Padua in 1761 first described an intracranial aneurysm, and seventeen years later Biunni² of Milan described a case of subarachnoid hemorrhage, the cause of which was found at autopsy to be a ruptured aneurysm of the circle of Willis. For the next seventy-five years the continental medical literature carried reports of hemorrhages and of aneurysms with little evidence of correlation between the two subjects. In 1859 Gull³ of Guy's Hospital correlated these reports and emphasized that "spontaneous subarachnoid hemorrhage" usually was due to rupture of an aneurysm of one of the arteries on the base of the brain. In 1924 Symonds,⁴ also of Guy's Hospital, and in 1941 Richardson and Hyland⁵ of Toronto brought the subject up to date in complete monographs. Recent reports by Magee⁶ and by Wolf, Goodell and Wolff⁷ have contributed data especially concerning prognosis.

This report is based on a study of the records of 130 patients suffering from subarachnoid hemorrhage at the Buffalo General Hospital in the years 1922 to 1935, inclusive. Seventy-five of the patients were women and 55 were men. They varied in age (fig. 1) from 7 months to 80 years. The age distribution was: 1 in the first decade of life, 1 in the second, 10 in the third, 24 in the fourth, 43 in the fifth, 30 in the sixth, 15 in the seventh and 6 in the eighth.

ETIOLOGY OF SPONTANEOUS SUBARACHNOID HEMORRHAGE

For the purpose of this review, the term spontaneous subarachnoid hemorrhage was restricted to include those cases of subarachnoid hemorrhage occurring without external trauma and without obvious cause for hemorrhage or preexisting disease. Cases of primary cerebral hemorrhage with secondary leakage into the subarachnoid space, bleeding brain tumors, blood dyscrasias, etc., were not included.

In 130 cases of subarachnoid hemorrhage, the cause of the hemorrhage was determined in 47 patients, 41 at necropsy and 6 at operation. Ruptured aneurysms were found in 44 of the 47 patients (93.6 per cent). Two aneurysms were found in each of 2 patients, making a total of 46 aneurysms. The origin of the hemorrhage was from a ruptured spinal artery in 1 case, from a ruptured arteriosclerotic vessel in 1, and in 1 case of bilateral occipital hemorrhages with subdural hematoma and subarachnoid hemorrhage the

origin of the bleeding was not found at necropsy. Of the 46 aneurysms, 44 were classified as being of "berry" type, one mycotic and one leaking arteriovenous (carotid-cavernous) aneurysm. It seems reasonable to assume that in the unproved cases the percentage due to aneurysm would parallel that of the proved cases.

A much more diverse etiology is obtained if all cases of subarachnoid bleeding are included. In discussing the etiology of subarachnoid hemorrhage Courville⁸ listed the cause of 149 cases found in the study of 1,500 autopsies. He concluded that external trauma probably causes more than half of all instances of subarachnoid hemorrhage. In this group were listed 35 cases of injuries and hemorrhagic diseases of the newborn, 32 due to arteriosclerosis and hypertension, 16 to ruptured aneurysms, 11 to embolism, etc.

Sands⁹ analyzed the observations on 120 cases of subarachnoid hemorrhage: Twenty-two per cent could not be classified as to cause; 7.5 per cent were attributed to trauma; 25 per cent to arteriosclerosis; 13.6 per cent to infectious diseases; 20.4 per cent to intracranial aneurysms, and a smaller number to cerebral neoplasms, blood dyscrasias and cerebral hemorrhages. Kernohan

TABLE 1.—Location of Aneurysms Found at Necropsy and at Operation*

Artery	Left	Middle	Right	Total	
Internal carotid.....	12	..	2	14	Carotid Segment 40
Anterior cerebral.....	2	..	5	7	
Anterior communicating.....	..	13	..	13	
Middle cerebral.....	3	..	3	6	
Posterior communicating.....	1	..	..	1	Basilar Segment 6
Posterior cerebral.....	2	..	..	2	
Posterior inferior cerebellar.....	..	..	1	1	
Basilar.....	..	2	..	2	
Total.....	20	15	11	46	

* In this table the main stem vessel is named. If the aneurysm occurred at the junction of the internal carotid and the posterior communicating, it is designated an aneurysm of the internal carotid. The carotid extends to the origin of the anterior cerebral artery.

and Woltman¹⁰ reported 4 cases of patients dying after operation for other cause, of subarachnoid hemorrhage due to primary necrosis of vessels, which they suspected was due to focal infarcts in the vessel walls. Bagley¹¹ reported 1 case of a man who suffered an attack of massive subarachnoid hemorrhage due to rupture of an internal carotid artery which eventually healed. Symonds⁴ in 124 cases found the cause of hemorrhage in 71. It was due to arteriosclerosis in 24, to syphilis in 10 and to aneurysms in 11. In 41 of the 124 cases the cause of hemorrhage was obscure. He asserted that hemorrhages of unexplained origin are often caused by aneurysms that are not found, since they frequently are minute and always are deeply imbedded in the clot and thus easily escape notice at autopsy.

Gull³ observed that the apparent rarity of aneurysms as the cause of hemorrhage probably was related to the fact that they were not looked for. He noted that they are difficult to find unless they are specifically

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1. Morgagni, J. B.: *De sedibus et causis morborum, Venetiis, ex typog. Remondiniana*, 1761, book 1, letter 4, case 19; cited by McDonald, C. A., and Korb, M.: *Intracranial Aneurysms*, Arch. Neurol. & Psychiat. 42: 298-328 (Aug.) 1939.

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8. Courville, C. B.: *Pathology of the Central Nervous System*, Mt. View, Calif., Pacific Press Publishing Association, 1937, p. 345.

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10. Kernohan, J. W., and Woltman, H. W.: *Postoperative Focal Non-septic Necrosis of Vertebral and Cerebellar Arteries with Rupture and Subarachnoid Hemorrhage*, J. A. M. A. 122: 1173-1177 (Aug. 21) 1943.

11. Bagley, C., Jr.: *Spontaneous Cerebral Hemorrhage: Discussion of Four Types with Surgical Considerations*, Arch. Neurol. & Psychiat. 27: 1133-1174 (May) 1932.

sought out. "Whenever young persons die of symptoms of invanescent apoplexy and after death large effusion of blood is found, especially if the effusion be over the surface of the brain in the meshes of the pia mater the presence of an aneurysm is probable." Schmidt¹² emphasized that failure to find an aneurysm

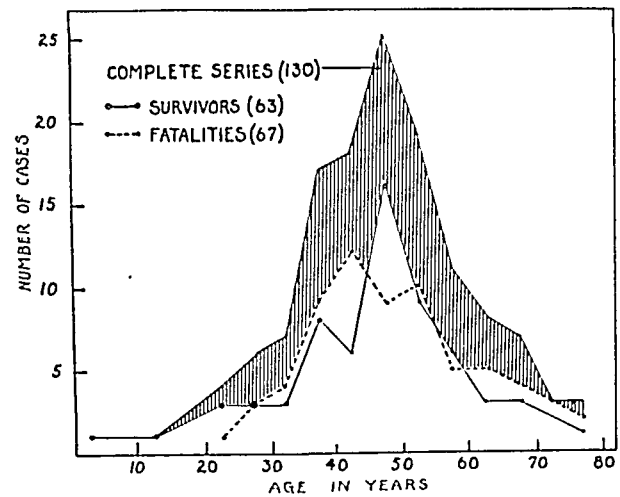


Fig. 1.—Graphic distribution of patients according to age.

during a routine postmortem examination does not exclude that probability. He believed that the great majority of, and perhaps all, spontaneous subarachnoid hemorrhages resulting in death were due to aneurysms.

It is evident that subarachnoid bleeding can occur in a variety of diseases. Usually the underlying disease is evident, however, and the analysis of this series leads to the conclusion that even in the presence of arteriosclerosis the origin of spontaneous subarachnoid hemorrhage is usually from a ruptured aneurysm of one of the arteries in or near the circle of Willis.

Location of Aneurysms.—The location of the aneurysms in this series is shown in table 1 and diagram-

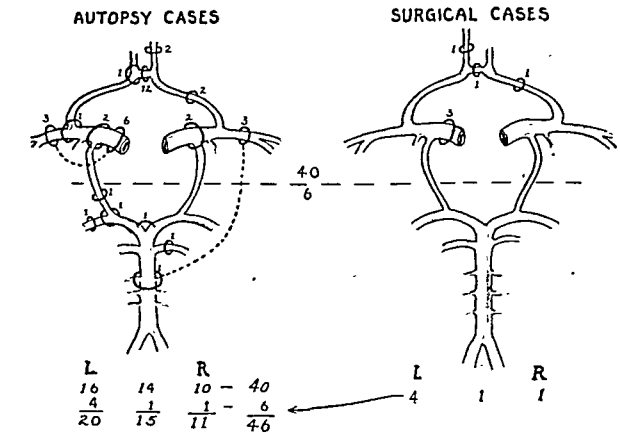


Fig. 2.—Diagrammatic presentation of location of aneurysms found at autopsy and at operation. Dotted lines indicate double aneurysms in 2 patients.

matically in figure 2. Twenty of the lesions were on the left side of the circle of Willis, eleven on the right and fifteen in the midline. In reported proved cases, the majority of aneurysms has been found on the anterior half of the circle of Willis. In this series this

observation was confirmed, forty examples being found on the carotid and six on the basilar segments of the circle.

INTRACEREBRAL HEMATOMAS

Of the 44 fatal cases of subarachnoid hemorrhage due to rupture of aneurysm, concomitant intracerebral hematomas were found in 23 (52 per cent) (fig. 3). The frontal lobe was involved in 17 cases. The hemorrhage originated from the anterior cerebral or communicating vessels in 12 of these, from the middle cerebral in 3 and from the internal carotid artery in 2. The temporal lobe was involved in 5 cases, by hemorrhage from the middle cerebral artery in 3 and from the posterior cerebral and posterior communicating in 1 case each. In one hematoma of the occipital lobe the vessel of origin of the hemorrhage was not found.

In 4 additional cases that were not examined at autopsy, intracerebral hematomas were found and evac-

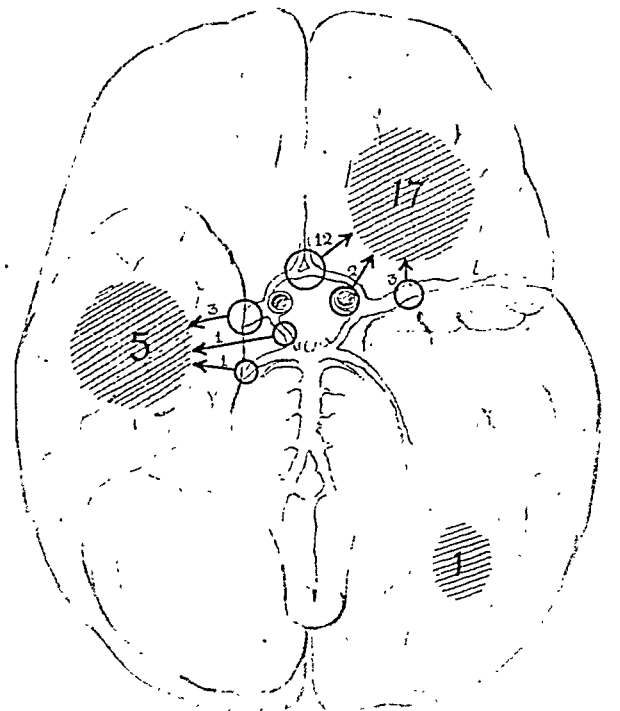


Fig. 3.—Location of intracerebral hematomas and the vessels of origin of the hemorrhage.

uated surgically. One patient recovered and 3 died. In 2 of the fatal cases the origin of the hemorrhage was found in aneurysms of the anterior cerebral arteries, and in the other in a mycotic aneurysm.

Clinical evidence of major cerebral damage accompanying spontaneous subarachnoid hemorrhage, especially in the presence of increasing intracranial pressure, should lead the clinician to suspect the presence of an intracerebral hematoma, since this lesion is found at necropsy much more frequently than is occlusion of a major cerebral artery.

CLINICAL COURSE AND PROGNOSIS

Recovery from the initial attack has been reported in approximately 50 per cent of patients. In this series 48.5 per cent recovered. Analysis of the clinical history and physical findings in this series yielded little diagnostic information that has not been described earlier. Various data were compared in the clinical

12. Schmidt, M.: Intracranial Aneurysms, Brain 53: 489-540, 1931

courses of patients who survived and those who died in an attempt to discover a better basis for prognosis in the individual case.

Onset.—The onset of symptoms was sudden in 90 per cent of patients, 10 per cent having vague, non-specific prodromes.

Character of Onset.—1. Head pain was the initial symptom in 69 of the 130 patients. Since this symptom is practically universal within a short time after onset, the percentages are not considered significant. Sixty-five per cent of those who recovered and 42 per cent of those who died recorded this as their first symptom. 2. Unconsciousness was the first sign in 42 patients. Of these, 29 (69 per cent) died and 13 (31 per cent) recovered. This may be significant, since in this series the chances of survival of a patient with unconsciousness as the presenting sign were only 3 to 7. 3. Less common initial symptoms were: paralysis in 4 patients, of whom 3 died; convulsions in 2, both of whom died, and dizziness in 2, both of whom recovered.

Circumstances of Onset.—Richardson and Hyland⁵ found that the activity of the patient at the time of hemorrhage was of little importance in determining onset or severity. The patients were at rest in bed, standing or walking in 78 per cent of cases. Undue

increased and found in 52 cases that systolic pressure was lower than 150 mg. of mercury. He believed that whatever the cause of the leak, increased blood pressure should not be implicated. The level of blood pressure after the acute episode, however, is no criterion of what it might have been at the moment of rupture of the aneurysm. Wolf, Goodell and Wolff⁷ found that the majority of their patients were engaged in ordinary activity when the rupture took place. Excessive activity was noted rarely before the hemorrhage.

In our series, also, the majority of patients were engaged in ordinary activities at the time of onset of hemorrhage. A few were engaged in activities that might elevate their blood pressure, such as swinging a sledgehammer at work, playful wrestling, coitus, polishing or washing a floor, carrying an outboard motor and moving heavy furniture. More commonly the patient was at his usual work, driving a car, walking, sitting, standing and in several instances was asleep. The patient's activity at the time of the onset was not judged worthy of specific record in the majority of instances in this series.

AGE

Age was not a determining factor in this series (fig. 1). The ages of patients who recovered ranged from 7 months to 74 years, an average of 45 years. The ages of those who died ranged from 25 to 80 years, an average of 48.4 years. This is contrary to the experience of Richardson and Hyland,⁵ who found the average age of patients who died to be ten years higher than that of the survivors. Magee⁶ found that 6 per cent of his patients were under 20 years of age, 50 per cent were in the third decade, 37 per cent in the fourth decade and 6 per cent in the fifth decade. In his series, the recovery rate diminished with the age. In Martland's¹³ series of 54 cases of sudden death due to subarachnoid hemorrhage, age was not a significant factor.

SEX

Although in this series women were more commonly victims of spontaneous subarachnoid hemorrhage than were men (75:55), death favored neither sex. Forty-eight per cent of the women and 51 per cent of the men died of the disease.

STATE OF HEALTH PRIOR TO SUBARACHNOID HEMORRHAGE

No history of any previous constitutional disease was obtained in 51 of the 130 cases. The records of the other patients revealed various disorders as summarized on table 2.

Vascular Disorders.—Thirteen (21 per cent) of the patients who recovered and 16 (24 per cent) of those who died had a history of "heart trouble" or findings indicative of chronic vascular disease, hypertension, or arteriosclerosis. Blood pressure at the time of admission was elevated in 21 of the 63 survivors (32 per cent) and in 26 of the 67 who died (39 per cent). As Richardson and Hyland⁵ pointed out, during the acute phase of the illness patients may show elevations of the blood pressure which subside as their condition improves. Magee⁶ found that in 52 patients of 63 in whom blood pressure readings were made the pressure was below 150 mm. of mercury. This was at a time when the spinal fluid pressure was increased.

Headache.—Chronic headaches prior to the hemorrhage were complained of by 7 (11 per cent) of the patients who recovered and by 7 (10 per cent) of those who died. From the description of the headaches

TABLE 2.—Summary of Previous Illness Recorded for Patients Admitted with Spontaneous Subarachnoid Hemorrhage

	Recovered (63)*	Died (67)*
No disease.....	26	25
Hypertension (heart trouble and arteriosclerosis).....	13 (21%)	16 (24%)
Chronic headache.....	7	7
Periodic headache or migraine.....	4	1
Diabetes.....	3	1
Pregnancy or post partum.....	2	2

* One patient in either or both groups had suffered from prostatic obstruction, deafness and tinnitus, alcoholism, attacks of syncope, recent head injury, mental disorder, Raynaud's disease, previous "stroke," acute infection of the upper respiratory tract, Bell's palsy and pulsating exophthalmos.

muscular exertion appeared to precipitate the onset in only about 18 per cent. They concluded that the rupture of an aneurysmal sac is usually a gradual process of stretching and hemorrhagic dissection and in only a few cases is the tear culminated by a sudden increase in blood pressure due to violent muscular effort. Only 8 per cent claimed an isolated incident as a precipitating factor in Magee's⁶ series. In 90 per cent there was no history of physical exertion, and in 28 per cent of his patients there was a special accent on rest, the patient being seized with the hemorrhage while in bed or in a chair. In his 50 cases of recurrence, more than two thirds occurred while the patients were in bed or in a quiet hospital environment. He concluded, "As between rest and effort this series suggests that the former deserves the greatest share of blame." Martland¹³ found that development of aneurysms was not related to trauma but that rupture might be precipitated by trauma or by physical exertion. He emphasized that trauma rarely was a cause, the same catastrophe occurring while asleep. Exertions which cause elevation of intracranial blood pressure, such as straining at stool, lacing the shoes, sexual intercourse or sneezing were of more importance than major trauma. Magee, on the other hand, made a series of sixty-three blood pressure readings while spinal fluid pressure was

13. Martland, H. S.: Spontaneous Subarachnoid Hemorrhage and Congenital "Berry" Aneurysms of the Circle of Willis, *Am. J. Surg.* 42: 10-19, 1939.

and the findings at postmortem examinations, no satisfactory explanation of this complaint was discovered.

Periodic headaches or migraine were complained of by 4 patients who recovered and by 1 who died. Dunning¹⁴ made an analysis of the association of migraine and aneurysm and found them associated occasionally.

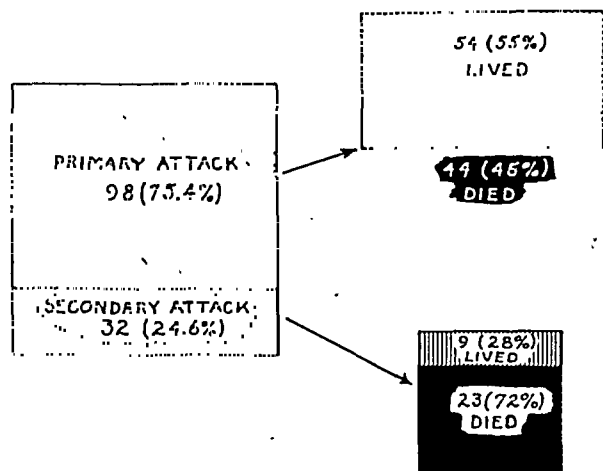


Fig. 4.—Proportion and fate of patients admitted in primary and secondary attacks of bleeding.

Since changes in caliber of cranial blood vessels are known to occur during attacks of migraine, he felt that this was probably a predisposing factor to hemorrhage and occlusion in the presence of an aneurysm. From the analysis of the records in our cases, migraine and other types of periodic headache must be listed together, since the histories were not sufficiently specific to allow differentiation. No case of true ophthalmoplegic migraine was found in the series.

Strauss and Tarachow¹⁵ attached great prognostic significance to the "underlying" or associated pathologic processes accompanying subarachnoid hemorrhage. They found that subarachnoid hemorrhage might occur in a variety of pathologic states and that the prognosis varied with the underlying or associated pathologic process. In 105 cases of subarachnoid hemorrhage, they found 39 patients with cardiorenal-vascular disease, of whom 14 died on the first admission. Of these, only 5 were examined at autopsy; 2 had aneurysms. In the other 3 no aneurysm was found, but, as mentioned before, failure to find an aneurysm does not eliminate the likelihood that the lesion is present. In their group of cases, moreover, are included 13 cases of clinically diagnosed brain tumor, 6 of subacute bacterial endocarditis, 5 of syphilis of the central nervous system, 4 of blood dyscrasias and 30 in which no clinical evidence of accompanying disease could be found. One may conclude that their series and ours are based on different criteria and that the results are not comparable.

No case of coarctation of the aorta was found among the cases examined at autopsy in this series. Baker and Shelden,¹⁶ Hearne,¹⁷ Walsh and King¹⁸ and

Woltman and Shelden¹⁹ have stressed the association of subarachnoid hemorrhage with coarctation and other lesions of the aorta. These associations are suggestive of the congenital origin of intracranial aneurysms.

In summary, our observations agree with those of Richardson and Hyland that hypertension was the only constitutional disorder that occurred with sufficient frequency to be regarded as more than incidental and that in the majority of cases there was no history of trauma, infection or other condition which could be regarded as a predisposing cause of the hemorrhage. In our series, however, hypertension was not an important factor in prognosis, since it was found in 21 per cent of patients who recovered and in 24 per cent of those who died. Nor did elevation of blood pressure on admission to the hospital seem significant in prognosis, being present in 32 per cent of patients who recovered and in 39 per cent of those who died.

HOSPITAL COURSE

Previous Attacks.—Ninety-eight patients in this series were admitted in their initial attacks of subarachnoid hemorrhage (fig. 4). Of these, 44 (45 per cent) died and 54 (55 per cent) recovered. Thirty-two patients had experienced previous attacks. Twenty-three (72 per cent) of these died and 9 (28 per cent) recovered. A patient who entered the hospital in his initial attack of hemorrhage had a little better than an even chance (55 per cent to 45 per cent) of recovery. One entering with a recurrent attack had only a 28 per cent chance of recovery.

Multiple Attacks.—Instances in which fresh bleeding occurred after initial improvement were classed as "multiple attacks." This factor has not been evaluated in most other reports in the literature, the exacerbation being considered a part of the initial process, since the vessel obviously does not have time to heal between the episodes.

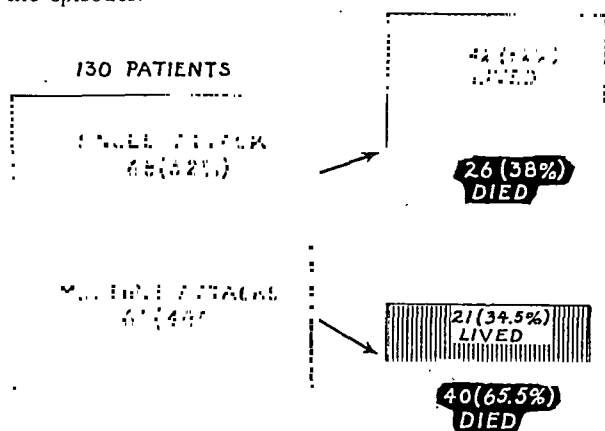


Fig. 5.—Mortality in relation to attacks of bleeding in the hospital.

Sixty-one patients in this series suffered multiple attacks of bleeding in the hospital, while 68 experienced only the one episode (fig. 5). Of the 68 patients who suffered a single episode of bleeding, 42 (62 per cent) recovered and 26 (38 per cent) died. Of the 61 who had multiple episodes of bleeding, 21 (34.5 per cent)

14. Dunning, H. S.: Intracranial and Extracranial Vascular Accidents in Migraine. *Arch. Neurol. & Psychiat.* 48: 396-406 (Sept.) 1942.

15. Strauss, I., and Tarachow, S.: Prognostic Factors in Spontaneous Subarachnoid Hemorrhage. *Arch. Neurol. & Psychiat.* 38: 240-258 (Aug.) 1937.

16. Baker, T. W., and Shelden, W. D.: Coarctation of Aorta with Intermittent Leakage of a Congenital Cerebral Aneurysm. *Am. J. M. Sc.* 191: 626-633, 1936.

17. Hearne, R.: Spontaneous Subarachnoid Hemorrhage with Coarctation of Aorta. *Arch. Neurol. & Psychiat.* 53: 391-392 (May) 1945.

18. Walsh, F. B., and King, A. B.: Ocular Signs of Intracranial Saccular Aneurysms. *Arch. Ophthalm.* 27: 1-33 (Jan.) 1942.

19. Woltman, H. W., and Shelden, W. D.: Neurologic Complications Associated with Congenital Stenosis of the Isthmus of the Aorta. *Arch. Neurol. & Psychiat.* 17: 303-316 (March) 1927.

recovered and 40 (65.5 per cent) died. The patients with multiple bleeding episodes had only about half the chance of recovery of those with a single episode. This probably means that the patient with the uncomplicated hospital course had a vascular defect that healed more readily than those bleeding repeatedly.

TABLE 3.—Comparison of Most Frequent Neurologic Signs in Fatal Cases and in Cases in Which There Was Recovery

	Recovered (61)	Died (61)
A. Hemiplegia.....	11	14
B. Monoplegia.....	5	1
C. Ocular palsy.....	25	25
D. Other cranial nerve palsies.....	14	6
E. Mental disturbances.....	30	56
F. Convulsions.....	4	14
1. General.....	4	9
2. Focal.....	0	5

Unconsciousness.—Unconsciousness during the course of the illness occurred in 13 (21 per cent) of patients who recovered and in 29 (42 per cent) of those who died. The patient who suffered loss of consciousness during the course of the illness had only half the chance of survival of those who did not.

PHYSICAL SIGNS

Physical signs in these patients are due to those secondary to the presence of blood in the subarachnoid space and localizing signs due to organic central nervous system damage.

1. **Signs Due to Subarachnoid Hemorrhage.**—Stiff neck and Kernig's signs were found in practically all cases either immediately or after a few hours. Sluggishly reacting pupils and diminished tendon reflexes were found frequently. Babinski's sign occurred without paralysis occasionally. Papilledema was found in 14 per cent of cases but never before the seventh day of the illness. In records in which a note was made of the ophthalmoscopic findings, fundus hemorrhage was found in 10 per cent of cases, usually associated with papilledema. In only 6 cases were found the subhyaloid hemorrhages considered typical of subarachnoid hemorrhage.

2. **Localizing Phenomena.**—Signs of damage to the central nervous system may be caused by the extension of the hemorrhage itself into the brain substance or by changes due to anoxia secondary to the bleeding lesion. Table 3 presents the localizing phenomena found in the 61 patients who recovered and in 61 who died.

TABLE 4.—Comparison of This Series with Two Series Previously Reported

	New York Hospital [†]	Magee ^a	Buffalo General Hospital
Patients.....	46	150	130
Died, first attack.....	11%	35%	39.9%
Recurrent attacks.....	52%	37%	35.4%
Died in recurrence.....	22%	21%	28.5%
Survived.....	67%	44%	56.9%*

* The fate of 1 survivor is not known. If alive, the figure here would be 37.6 per cent.

It may be concluded that physical signs give evidence of damage to the brain accompanying subarachnoid hemorrhage, but in this series they were not helpful in prognosis.

SUMMARY OF IMMEDIATE PROGNOSIS

Of 130 patients with subarachnoid hemorrhage, 67 (51.5 per cent) died and 63 (48.5 per cent) recovered to leave the hospital.

Age was not a significant factor in prognosis, the average ages of those who recovered and those who died being essentially the same. Hypertension and other vascular diseases were as prevalent among those who recovered as among those who died.

Of 32 patients who suffered a previous attack of subarachnoid hemorrhage, 72 per cent died. Of 98 patients who entered the hospital in their initial attack, 42 per cent died.

During their hospital course 68 patients had a single episode of bleeding, and 62 per cent of these recovered. Sixty-one patients had multiple attacks of bleeding in the hospital, and of these only 34.5 per cent recovered.

Forty-two patients were unconscious during the illness, and of these 29 (69 per cent) died and 13 (31 per cent) recovered.

The occurrence of mental disturbances and convulsions during hospital course was accompanied by an increase in the mortality rate.

LATE PROGNOSIS

Magee ^a recorded the fate of 150 patients suffering from subarachnoid hemorrhage; 52 died and 98 lived. Of the 98 survivors, 50 suffered recurrence, from which 32 died and 18 lived. Eighty-four of the original

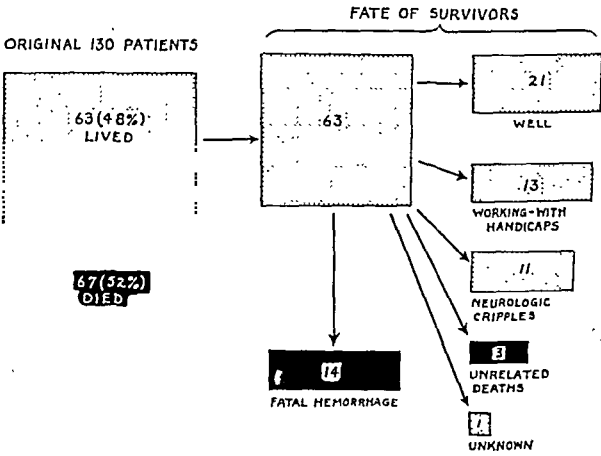


Fig. 6.—Present status of 130 patients with spontaneous subarachnoid hemorrhage.

150 patients died eventually of the disease and 66 lived. Twenty-one of the 66 remained so severely crippled as to be permanently disabled. Of the 150 patients, then, only 45 (35 per cent) survived in satisfactory condition.

Wolf, Goodell and Wolff [†] analyzed a group of 46 patients followed at the New York Hospital and compared their results with those of Magee. To their result, ours have been added in table 4. Many obscure or apparently minor factors influence recovery and fatality in reported series. Wolf and his co-workers attributed their more favorable figures to the fact that the New York Hospital had no ambulance service! Patients having severe primary attacks died at home or entered other hospitals, leaving a larger number to survive and also to suffer subsequent fatal attacks.

Follow-Up Studies (fig. 6).—Of our 130 patients, 67 (51.5 per cent) died in the hospital and 63 (48.5 per cent) survived. Of the 63 who survived, 62 have been traced, and their present status has been determined either by personal contact or through their physicians. Of the 62, 48 (77.4 per cent) have survived and 14 (23.2 per cent) have died since discharge.

Three others have died of unrelated diseases sufficiently long after discharge to have demonstrated good recovery.

Deaths Since Discharge.—Fourteen patients have died as the result of vascular accidents; 5 within two weeks of discharge from the hospital, presumably from unhealed original lesions. All 5 had left the hospital against advice, one suffering a fresh hemorrhage in the ambulance on the way home. Four had been severely crippled by damage to the brain. Duration of bed rest following their hemorrhages had ranged from four to thirty days, an average of fifteen days. Three of the 5 had suffered multiple attacks of bleeding in the hospital. In 4 of the 5, the onset of the clinical picture had been with unconsciousness.

The remaining 9 lived after discharge from the hospital for periods varying from one month to eight years (one, one, three, six, eight and ten months and three, five and eight years). Of these, 3 showed neurologic residuals of their accidents at the time of discharge. Duration of bed rest following their accidents had ranged from sixteen to forty-two days, an average of 28.5 days. Only 2 of these patients had suffered multiple attacks of bleeding in the hospital. In 3 of these patients the onset of the original hemorrhage had been accompanied by unconsciousness and in 1 by hemiplegia.

Survivors.—Of the original 130 patients, 48 (36.9 per cent) are known to have survived the disease. Twenty-one of these consider themselves completely recovered. Thirteen others are back at work, suffering neurologic handicaps, and 11 are so severely handicapped as to be crippled. Three subsequently died of unrelated causes. Of the original 130 patients only 21 (16.9 per cent) may be considered to have survived intact up to the present time. Since 37 (28.5 per cent) have suffered their attacks within the past five years, this figure may be expected to diminish with the passage of time.

SUMMARY

Analysis was made of data obtained from the records of 130 patients entering the hospital with spontaneous subarachnoid hemorrhage.

In 44 of 47 proved cases hemorrhage was caused by ruptured aneurysms (93.6 per cent). In 23 of 44 fatal cases concomitant intracerebral hematomas were found (52 per cent).

Factors unfavorably affecting prognosis for the presenting attack were: previous attacks, multiple hemorrhages in the hospital, mental disturbances, unconsciousness and convulsions.

Of the 130 patients, 67 (51.5 per cent) died in the hospital. Sixty-three patients (48.5 per cent) survived and 62 of them have been followed: 17 have died and 45 live. Only 21 (16.9 per cent) of the original 130 are considered recovered to date, 13 are able to work with neurologic handicaps and 11 are crippled.

ABSTRACT OF DISCUSSION

DR. J. C. RICHARDSON, Toronto, Canada: At the Toronto General Hospital we have been interested in the types of intracerebral hemorrhage produced by aneurysms. Dr. Hamby has encountered such hemorrhages in 52 per cent of his cases, a percentage similar to ours. His demonstration of aneurysms in cases of intracerebral hematoma treated surgically is important. It seems likely that aneurysms are the commonest cause of such spontaneous intracerebral hemorrhages in nonhypertensive patients. Most commonly, aneurysms produce intracerebral bleeding, coincident with or shortly after a subarachnoid hemorrhage, but one occasionally sees a predominantly intracerebral

hemorrhage with minimal subarachnoid leakage. We had a verified case of an aneurysm which caused a purely intracerebral hemorrhage with no blood in the cerebrospinal fluid. Hemorrhages of the temporal lobe produce visual field defects and aphasia. Not uncommonly there is extension of bleeding into the capsular region with hemiplegia. The clinical syndrome of hemorrhage of the frontal lobe from an anterior cerebral aneurysm is featured by striking apathy, acute dementia and often a grasp reflex. We have confirmed Dr. Hamby's observation that these intracerebral hemorrhages, along with subarachnoid hemorrhage, do not materially lower the patient's chance of survival. What is the prognosis in the case of a person having a second hemorrhage from an aneurysm, some months or years after a first attack? Dr. Hamby finds a much higher mortality when there have been previous hemorrhages. In our series the experience has been rather different, suggesting that there is no greater danger of death in a late second or third hemorrhage than in the first. It is of great importance that recurrent attacks of bleeding may occur with added dangers in the first few weeks after the original subarachnoid hemorrhage. The danger peak is between two and four weeks. In Toronto we seem to have had a rather smaller incidence of these earlier relapses. Reviewing 124 cases recently, I found that only 26 had had recurrences of bleeding in the three months after the first hemorrhage, and 15 of these cases were fatal. There was 52 per cent mortality in the whole group. I do think that absolute bed rest for a minimum of six weeks and usually two months is important in preventing these early relapses. We are all interested in the eventual outcome of patients who have survived a subarachnoid hemorrhage. The over-all picture, including the high toll of death from initial hemorrhage and early recurrences, is not a bright one. On the other hand, the outlook for those patients who have survived the first few months after a hemorrhage is not too bad. I think that the figures of Hamby, as well as those of Magee and of Wolf, Goodell and Wolff, all give that same impression.

DR. I. S. WEICHSER, New York: The paper of Dr. Hamby gives me an opportunity to say a word on the diagnosis and treatment of subarachnoid hemorrhage. The former is fairly easy; the second is called conservative, which is no treatment at all. Generally we speculate about aneurysms and their location. With the introduction of "diodrast" (iodopyracet) by Dr. Gross, a safe method of outlining vascular anomalies can be used both for diagnosis and treatment. The clinical experiences of Dr. Hamby, in the main, parallel our own at the Mount Sinai Hospital. One word about psychoses in subarachnoid hemorrhage: The Korsakoff syndrome occurs in subarachnoid hemorrhage, the only condition, as far as I know, other than alcoholism with avitaminosis. In our experience, hemorrhages caused by aneurysms are frequently fatal in the first or second episode, whereas patients who have repeated attacks are more likely to have other vascular anomalies. We have one instance in which there were fourteen recurrences. Three or four recurrences in the same patient were not uncommon. Patients with such anomalies can be treated more successfully than those with aneurysms. The common carotid artery was tied in 2 instances; in 1 it was ligated intracranially. The reason why the common carotid artery was ligated is that the circulation is cut down only by about 50 per cent and the danger of hemiplegia or convulsions is practically eliminated. We have not had fatalities following ligation of the common carotid artery. In one patient who had several recurrences, the common carotid artery was tied in 1943; she has had no attacks since. Arteriography is a simple and safe procedure. It is a guide to diagnosis, as to the type of lesion and its localization. It is an indication for treatment. Patients who have repeated attacks of subarachnoid hemorrhage are more likely to have vascular anomalies. Recurrences may be prevented in those patients in whom arteriography leads to the successful ligation of vessels either extracranially or intracranially.

DR. RUDOLPH JAEGER, Philadelphia: This beautiful presentation of Dr. Hamby, of course, rightfully emphasizes the fatal nature of this disease, which I am afraid in the past has not been sufficiently emphasized as a hazardous disorder. There has been a tendency to temporize with these cases, not to treat them actively, and to wait until another hemorrhage occurs, and

we know now that this is not the proper attitude to take toward them. The diagnosis as to the cause of spontaneous subarachnoid hemorrhage is a challenge to the neurosurgeons. As has been said, the diagnosis of subarachnoid hemorrhage is easy, but the point of vascular rupture may be difficult to find. We feel that these lesions should be approached surgically when there are definite localizing neurologic signs. The problem then is not so difficult. But, in these cases in which we simply have the general signs of spontaneous subarachnoid hemorrhage with blood in the spinal fluid, we then have the added problem of localizing the causative lesion. Certainly, the surgeon now must solve this problem, as only he can make the precise diagnosis. Angiography seems at present to be the answer to an accurate diagnosis of these lesions. This procedure has not been fully explored. We feel that it is the answer if we can go ahead and develop it to the point where it is accurate and safe. We are extremely cautious with angiography at present, and only time will tell its exact worth. It seems that we are fast approaching the point where aneurysmal lesions will practically all be operated on and where we can locate them by our diagnostic methods. We ultimately should be able to locate each of these aneurysms which has ruptured and treat it directly. Experience has shown that the surgical mortality need not be prohibitive. Single ligation of the carotid artery in the neck will not cure aneurysms of the circle of Willis. The aneurysm must be attacked directly and tied off. This is the only specific treatment for an intracranial aneurysm.

MODERN MEDICAL AND SURGICAL TREATMENT OF PEPTIC ULCER

An Appraisal

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In 1793 Matthew Baillie of London described the morbid anatomy and symptoms of ulcer of the stomach. The first reference in medical literature to ulcer of the duodenum appeared in 1817 in the *London Medico-Chirurgical Transactions*. It consisted of a report by Mr. Travers of 2 cases of perforation. In 1887 Bucquoz, following a suggestion made by Abercrombie some years previously, reported 5 cases of duodenal ulcer based on the history alone, 1 of which was verified by autopsy. The principles of the medical treatment of ulcer employed today were first laid down by Cruveilhier and others nearly one hundred years ago, and the first successful operation for perforated ulcer was reported in 1894 by H. P. Dean.

So it seems that this lesion has been known to us for one hundred and fifty odd years, and for some fifty years it has been subject to the surgeon's scalpel. All of which would be merely of historical interest were it not for the depressing fact that during these years we have not learned its cause and still grope about for its cure. When it has been estimated that 1,500,000 persons in the United States past 30 years of age are affected by peptic ulcer during a period of ten years (Ivy) and that 10,000 persons die each year from the disease and its complications (Wangensteen), we are confronted with a serious state of affairs. Such being the case, it is time to inquire diligently into the reasons for this predicament.

I shall begin such an inquiry by briefly discussing a few of the more important aspects concerning the patho-

genesis of ulcer, since it follows that success in the treatment of any disorder is dependent on an understanding of its cause.

PATHOGENESIS OF ULCER

An immediate need is to abolish the term "peptic ulcer" that serves as a diagnosis for the condition. There is no proof whatever that peptic ulcer is due to pepsin; furthermore, the ulcer itself is no more the disease than an ulcer on the toe is diabetes, arteriosclerosis or Buerger's disease. For reasons that I shall presently mention, a more accurate and descriptive term would be "neurocirculatory ulcer." When we begin to look on the ulcer as the complication of a systemic disorder, we shall have made our first step toward a solution of this problem. Obviously, this will be difficult to do as long as we persist in focusing our attention on the local lesion in the stomach and duodenum. Such a misconception of the disease may be attributed to what I believe is the erroneous assumption that peptic ulcer is primarily due to an increase of the acid-pepsin factor of the gastric juice and that control of this factor is the main essential for healing. Nearly fifty years ago Cohnheim said that hyperchlorhydria as such never causes peptic ulcer. He believed, on the contrary, that ulcer caused the hyperchlorhydria, the latter being the result of retention of food and irritation of the gastric glands due to pylorospasm. In 1926 Eggleston was of the opinion that hyperchlorhydria resulted from pylorospasm incident to active ulceration. Necheles expressed the belief that increased secretion of acid in animals with ulcers is due to the local lesion and that acidity does not go up until an ulcer is formed. In further support of these views is the statement of Cowgill that retention of food in the stomach, caused by pylorospasm or pyloric stenosis, augments the gastric and intestinal phases of gastric secretion. As long ago as 1912 Moynihan said that the idea is deep rooted that the symptoms of ulcer are always due to an excessive acidity in the gastric juice, but "there was no foundation in fact for this venerable fallacy." If it was a venerable fallacy in Moynihan's day, it has become a fixed obsession since his time.

I am well aware of the vast amount of experimental work that has been done that incriminates acid as the cause of ulcer. I furthermore appreciate that ulcer does not occur in achlorhydric stomachs. Despite this, it is difficult to assume that a fixed relationship exists between the degree of acid secretion and ulcer, as we know that many persons with excessively high acid secretion do not have ulcer and that others with normal or diminished secretion do have it. Also, while it is a well established fact that measures designed to diminish secretion of acid provide comfort for the patient, it must be remembered that those same measures allay pylorospasm and that this may account for their effectiveness. It is common knowledge, furthermore, that patients with ulcer may be comfortable despite wide fluctuations in their gastric acidity and without the use of antacid drugs. There is much to suggest, therefore, that acid does not play the primary role in the pathogenesis of ulcer and that it is time to lay less emphasis on the importance of the acid-pepsin factor and devote the time and talents expended in pursuing this phase of production of ulcer to broader and more fundamental aspects. Such action would be justified for the sound reason that all the medical and surgical methods of treating ulcer, past and present, have been designed to neutralize or abolish secretion of

Read before the Section on Internal Medicine at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

Because of lack of space this article has been abbreviated in *THE JOURNAL* by omission of the bibliography. The complete paper will be found in the author's reprints, which the author will be pleased to send on request.

acid, and in large measure they have failed. Who can say he has cured an ulcer when the familiar scars seen at operation and necropsy attest so well that it has cured itself! The time has arrived for more philosophy and less technic—to use the words of Ryle. I would add to this a plea for a degree of clinical research that will keep pace, at least, with the intensive experimental research which we have witnessed for so many years. In my humble opinion, the solution of the problem of ulcer will not be found in the belly of the dog any more than will the cause of hypertension, arteriosclerosis or heart disease.

How then shall we approach the broader and more fundamental aspects of ulcer to which I have alluded and on which a rational plan of treatment must depend? I would suggest, in the manner expressed by John A. Ryle in outlining the purposes of the Institute of Social Medicine at Oxford; i. e., "To investigate the influence of social, genetic, environmental and domestic factors on the incidence of human disease and disability." Ryle went on to point out what I believe is one of the great faults of our profession today:

Investigation to the limit, mainly by objective methods and often with too little said to or done for the patient during or after the tedious process, has been the prevailing trend, especially in the case of the more chronic or seemingly more obscure varieties of disorder and disease. More and more accurate assessments of local pathology, with the help of more and more colleagues and instruments, and less and less intimate understanding of the patient as a whole man or woman with a home and anxieties and economic problems and a past and a future and a job to be held or lost, have become the order of the day.

I would attribute the highly unsatisfactory results of the medical and surgical treatment of ulcer today to our failure to recognize the need for the kind of investigation to which Dr. Ryle referred.

I will mention briefly a few of the factors that I believe are related specifically to ulcer. The first is the constitutional background. Is there a bonafide "ulcer diathesis" that renders certain types of persons, because of psychologic and physical characteristics, more susceptible to ulcer? Ryle and Hurst and Stewart, who have been among the soundest contributors to this subject, stressed the importance of a familial influence. Among the most recent observations on this aspect of the disease are those of Gainsborough and Slater, reporting from London, England, which suggest that a hereditary constitutional factor appears to predispose to the condition. Edwards and Copeman also reported a family history of ulcer in more than one half of 139 cases studied.

The next aspect of the disease that I would consider of primary importance is the vascular. Clinical and autopsy records indicate that the incidence of duodenal ulcer has increased in the past twenty-five years, according to Ihre and Müller. It is of interest to note that the trend corresponds to an increasing incidence of vascular disease. From 1921 to 1935 inclusive, there was a considerable increase in the mortality from duodenal ulcer in males 1 to 74 years of age in the United States, according to the statistics of the Metropolitan Life Insurance Company (Dublin and Lotka). The increase, as might be expected, was greater among men than women, the latter enjoying a relative immunity to duodenal ulcer. The mortality from gastric ulcer increased from 4.2 per hundred thousand in 1920 to 7.2 in 1935. From 1930 to 1934 inclusive, the mor-

tality among white men was about five times as great as among white women. There appeared no satisfactory explanation for a consistent downward trend in mortality from ulcer of the stomach among white women. In contrasting these figures to those on disease of the coronary arteries, one notes that from 1930 to 1934 inclusive, the mortality of the latter rose from 7.9 per hundred thousand to 27.4, an increase of nearly three and one-half times in four years.

The crux of the ulcer problem which should be thoroughly investigated is the matter of cell resistance on the part of the gastric mucosa. At present it would seem that cellular resistance depends on the state of the circulation in the stomach and on the chemical composition of the blood reaching the cell. Boles, Riggs, and Griffiths demonstrated that a significant influence was exerted in the formation of ulcer by chronic circulatory insufficiency in the deeper layers of the stomach—the insufficiency being established through quantitative, qualitative or vasomotor disturbances in the circulatory system. Necheles has corroborated these observations. The fact that disease of the vessels at the site of an ulcer cannot always be demonstrated need not be surprising, especially in younger persons, because in most cases the reduced blood flow to the ulcer is the result of spasm of the vessels. It occasions no surprise when proportionate disease of the coronary arteries cannot be demonstrated in certain cases of angina pectoris. That ulcer does not follow ligation of the vessels to the stomach may be explained by the fact that cellular resistance does not seem to be lost until chronic inflammatory changes have become established in the deeper layers of the stomach wall. The studies of Dodds and of Nedzel demonstrated that local areas of anemia in the gastric mucosa, resulting from chronic arterial spasm produced by the injections of epinephrine or "pitressin," rendered it susceptible to the action of the acid-pepsin factor in the gastric juice. Babkin expressed the opinion that the devitalizing mechanism is one of vasodilation and stasis.

Bachrach, Grossman and Ivy have recently demonstrated that autodigestion of the stomach does not occur if the circulation to the mucosa is adequate and if the metabolic and nutritional condition of the patient is sufficient to maintain the tolerance of the cells to acid-pepsin secretion and to provide for their regeneration and proliferation and for the secretion of mucus. The belief was expressed by Roth and Ivy "that the proteolytic action of acid and pepsin secretion upon a gastric mucosa rendered more susceptible to the ulcerative process by the vascular and 'cellular' changes induced by caffeine, results in the development of an ulcer." The effect of emotional disturbances on the circulation of the stomach leading to mucosal erosion and hemorrhages have been graphically described by Wolf and Wolff. The recent observations of Aycock and Hendrick, showing that venous thrombosis occurs more frequently in the spring and fall months of the year and that it is less prevalent in winterless areas, are of interest because of the similarity in behavior to ulcer. Since ulcer most frequently occurs in that part of the stomach and duodenum in which there is a rich supply of nerves and blood vessels and since the influence of the one over the other may diminish cellular resistance, the name "neurocirculatory" ulcer of the stomach or the duodenum is suggested.

That tobacco is instrumental in production of ulcer and especially in the prevention of healing is agreed by most students of the subject. The ill effects of tobacco may logically be attributed to its action on the end vessels in the stomach and duodenum, as it is known to be a potent vasoconstrictor of peripheral vessels and to reduce their blood flow (Stewart). For this reason it is recognized as a major factor in the production and healing of such ulcers as are seen in thromboangiitis obliterans (Silbert) and arteriosclerosis obliterans in diabetes (Weinroth and Herzstein). Indeed there is much else in common in the behavior of these ulcers and peptic ulcer that suggests a similar vascular origin. That the ill effects of tobacco are due to its action on the circulation rather than on the secretion of the stomach is borne out by the experimental work of Schnedorf and Ivy. In the opinion of Goodman and Gilman the acidity of the gastric contents is not influenced by cigarette smoking in smokers with peptic ulcer. These authors suggested that the gastrointestinal complaints caused by the use of tobacco may be secondary to cardiovascular disturbances. In this connection the observations of Jamieson, Willingworth and Scott are of interest, though they occasion no surprise. They found that excessive cigarette smoking was associated with mild symptoms. I would presume to quote to Jamieson, Willingworth and Scott the words of Richard le Gallienne: "Behind the times I know I am, but what is a tired man to do? I light my pipe and read Charles Lamb." Such a man, as we might suspect, does not have ulcer!

The matter of sex and the reasons for the difference in behavior of duodenal and gastric ulcers are matters that require investigation, as they enter so strongly into any consideration of treatment. There may be some merit in wondering whether gastric and duodenal ulcer are one and the same lesion and whether their treatment should be similar. When one considers that duodenal ulcer occurs so much more frequently in men than women, that it occurs more frequently than benign gastric ulcer, that it does not heal so spontaneously as the latter, that the mortality of duodenal ulcer is increasing in men, that the mortality of gastric ulcer is stationary or declining in women, that the two ulcers exhibit differences in the frequency of such complications as hemorrhage and perforation and differences in response to surgical treatment and, finally, that gastric ulcer is frequently malignant while duodenal ulcer rarely is so, one realizes that too much emphasis cannot be placed on the importance of greater accuracy in diagnosis so that clinical, operative and necropsy findings can be better reconciled.

The immediate results of the treatment of ulcer, be it medical or surgical, must take into consideration the effect of climate and season. Significant changes in the chemical composition of the blood and in some cardiovascular reactions in peptic ulcer were observed by Riggs, Boles, Reinhold and Shore in patients studied throughout a one year period. It is well known that peptic ulcers are notoriously troublesome in the spring and fall months. In addition to reactivation, the complication of hemorrhage, in my experience, is more common in these months. Ulcers subside in summer and make their appearance less frequently in uniformly warm climates. This may logically be due to the absence of alterations in the bodily circulation which

are induced by abrupt changes in the climate and seasons (LeLangen). Finally, an appraisal of treatment cannot ignore the natural remissions of the disease which may extend over a period of weeks, months or even years. Such are some of the basic problems that must be evaluated in this disease before we can properly appraise any method of treatment.

TREATMENT

I do not believe that we should claim credit for permanent cures of gastric and duodenal ulcer, although we can do much to promote healing and prevent recurrences and complications. How best may this be done, by surgical or medical means? Let us consider the record.

The consensus of opinion is that peptic ulcer is a medical problem and that operations should be reserved for the familiar complications of perforation, hemorrhage, obstruction and so-called intractability. The trend from surgical to medical treatment has taken place in a conspicuous way during the past twenty-five years. At the Mayo Clinic (Eusterman), the operations for duodenal ulcer dropped from 38 per cent to 13 per cent during this period. During the past eighteen years, the surgical treatment for gastric ulcer rose slightly from 50 per cent to 62 per cent, the increase presumably being due to the assumption that most gastric ulcers should be regarded as malignant or potentially so. At the Lahey Clinic (Lahey and Marshall), only 6.6 per cent of 6,550 patients with duodenal ulcer were operated on and 18 per cent of 450 patients with gastric ulcer. At the Peter Bent Brigham Hospital in Boston, Zollinger reported that in the period from 1932 to 1937 only 7 per cent of 1,200 patients with peptic ulcer were treated surgically and 93 per cent medically.

Medical Methods.—The shift from surgical to medical management of ulcer during the past twenty-five years may be attributed to the fact that while medicine may not accomplish much good, it at least is productive of little harm. It has been estimated that the results of the medical treatment of ulcer are unsatisfactory in 40 per cent to 60 per cent of cases (Krarup). Raimondi and Collen gave an incidence of recurrence of 83 per cent in 151 patients treated for two years. The unsatisfactory results of medical treatment can be charged, I believe, to preoccupation with the surgeon's objective; i. e., correction of the chemical environment of the lesion. The medical control of ulcer and its attendant acid secretion is attempted by rest, diet, no alcohol, coffee or tobacco, and an injunction to lead a calm and imperturbable life. While acidity may be controlled by these means, healing and recovery would appear to be the result primarily of release of pylorospasm and vascular spasm in the gastric vessels. The rewards, if such they be, of such a regimen are inactivation and healing of the ulcer, provided it has not become scarred and indurated from years of abuse.

Extracts: Enterogastrone concentrate is obtained from the small intestine of hogs. It has been developed and is being used clinically by Ivy and his group. It inhibits gastric secretion and motility. Its effect on cellular resistance is being studied. If it is shown to increase cellular resistance, it should contribute to the prevention and healing of ulcer. Ivy reported (1943) a group of 26 patients who received injections of

enterogastrone six times a week for three to twelve months, in whom the results have been very gratifying. The unfortunate disadvantage of such treatment is the necessity for almost daily injections over a period of months. The length of time a remission continues after a course of treatment with enterogastrone has not been determined, though it appears to last for some time, as has been demonstrated by Greengard and his colleagues, in a therapeutic trial on 43 Mann-Williamson dogs and 58 patients suffering from proved peptic ulcer. It is to be hoped that the oral preparation which Ivy is using may prove satisfactory, since the parenteral treatment as outlined at present is impractical.

Sandweiss and his co-workers some time ago isolated an antiulcer principle in human urine (urogastrone) which acted as a depressant of gastric secretion. Later, they observed that the beneficial effect on ulcer was probably due to a substance they called anthelone, that appeared to increase cellular resistance and thereby provided immunization against ulcer. If this work is sustained, a definite contribution to the management of ulcer may be expected.

The employment of extracts, hormones or other substances by injection for the treatment of ulcer is analogous to the use of insulin for diabetes and liver extract for primary anemia. Any benefit that may accrue from their use is probably of a temporary nature, and if it is to be maintained, courses of injections or oral therapy would have to be given indefinitely at intervals yet to be determined.

Intragastric Drip: This method of treatment, first described by Winkelstein, is a troublesome one at times and is not well received by all patients. It is undoubtedly effective in reducing acid secretion and is particularly well suited to refractory ulcers with a high continuous nocturnal secretion, and especially when pyloric obstruction is present.

Mucin: Mucin, as originally used by Fogelson and Atkinson, offered some promise in the treatment of ulcer because of its protective and antacid properties. Alone it lost favor, but at present it is being combined with neutral antacids and may prove helpful as a supplement in treatment.

Protein Hydrolysates: I do not believe that the various protein hydrolysates and amino acids exert any specific influence on ulcer; as supplements to the diet, they are useful. The necessity for them was shown in the studies on the chemical composition of the blood in patients having ulcer by Riggs, Reinhold, Shore and myself. Co Tui and co-workers demonstrated that protein hydrolysate therapy promptly inactivated ulcer, but did not insure against any recurrence with the patient on his regular diet.

Anion Exchange Resins: An interesting addition to the medical treatment of ulcer is the use of the anion exchange resins as described by Spears and Pfeiffer. These substances qualify as satisfactory antacids and inhibitors of peptic activity and as such should prove helpful in certain cases with a normally high and persistent acid secretion.

Surgical Methods.—First of the surgical attacks on ulcer was gastroenterostomy. It was designed to neutralize gastric acidity and thereby cure the ulcer. It was heralded as a cure in 90 per cent of cases by the surgical masters of the day. Its abysmal failure because of recurrent and marginal ulcers needs no

recounting at this time. Despite its shortcomings, it still serves a useful purpose in certain cases of pyloric obstruction in which other more radical procedures are inadvisable.

In the wake of gastroenterostomy there followed the various modifications of resection of the stomach. The purpose here was the partial or complete elimination of the acid-secreting portion of the stomach, the doctrine of "no acid, no ulcer" being tenaciously maintained. It might have been well had resection eliminated acid, but that such is not the case, especially for duodenal ulcer, is well recognized at this time. Heuer and his colleagues found that a reduction in acid secretion occurred after resection, depending on the extent of the resection. They concluded, however, that resection of any magnitude consistent with a reasonable mortality does not insure achlorhydria. Moreover, the clinical result of resection could not be correlated with a change in acidity since 90 per cent of their patients who had satisfactory results from the operation only 25 per cent had a reduction in acidity. They were of the opinion that if their observations were confirmed by others, the idea of insuring achlorhydria by larger and larger resections would appear to be of doubtful value. Klein, Aschner and Crohn, Kiefer and others have noted persistent acid secretion following resection, especially when done for duodenal ulcer. In connection with this matter of acidity before and after resection, it is absolutely essential in the interests of accuracy that histamine be used as a gastric stimulant; also that the precautions outlined by Kiefer be followed. He showed from a study of 141 patients that 68 per cent showed no free acid in a single forty-five minute specimen after an Ewald test meal following resection. However, when histamine was used, 16 out of 23 patients with a negative response to the Ewald meal were found to have free acid. He concluded that the secretion of free acid persists after subtotal gastrectomy in an appreciable number of cases, provided the stimulation is adequate. Jordan and Kiefer have emphasized the importance of securing fractional specimens for at least two hours with the patients lying flat in the supine position. I would emphasize the necessity of knowing that the tip of the tube is in the resected stomach if accurate values of acidity are to be obtained. Fluoroscopic examination may be necessary for this purpose. It can safely be said that a reduction of acidity may be expected to follow in most cases of resection for gastric ulcer. In the case of duodenal ulcer, however, the effect on acid secretion is problematic, to say the least.

That gastric resection is not the answer to the ulcer problem may be suspected from the widely varying statistics concerning its results and the diversity of opinion as to what the method and extent of the procedure should be.

The immediate mortality (2 to 22 per cent) has been so reduced in some circles that in skilful hands the operation itself under favorable circumstances carries little hazard. The morbidity on the other hand, as gaged by recurrences, jejunal ulcer, hemorrhage, perforation, loss of weight, anemia, postprandial symptoms and metabolic disorders, is well nigh impossible to appraise. The statistics in general covering these matters are not acceptable. Marshall and Schmidt, in a review of gastric surgery, stated that the composite figures show about 90 per cent satisfactory results from

subtotal gastrectomy for gastric and duodenal ulcer. This is about the same figure cited some years ago in behalf of gastroenterostomy. John Deaver, in citing such a figure, went on to say, "The ultimate results of gastroenterostomy have been most satisfactory." The statistics covering resection, furthermore, are incomplete in that they are not broken down as to age and sex of patient, location of the ulcer, total duration of the illness, associated disease, length of follow-up period, indications for the operation and precipitating causes of the complications. Such information covering at least a ten year period is essential if dependable conclusions are to be drawn. Ransom, in a study of the end results of subtotal gastrectomy for gastric ulcer, after a twenty year period of observation, reported excellent results in 62 per cent of 138 cases, good results in 30 per cent and poor results in 5 per cent. Verified jejunal ulcer was found in 3 per cent. By excellent was meant complete freedom from symptoms in 65 cases and very slight symptoms in 21 cases.

That the results of resection for duodenal ulcer are not as satisfactory as for gastric ulcer is indicated by the report of Kiefer, which shows an incidence of gastrojejunal ulcer of 11.4 per cent in a series of 173 cases. Rienhoff had to reoperate on 29 patients in a group of 255 who had had a conservative resection of duodenal ulcer, which indicated an incidence of 11.3 per cent recurrences. Of the survivors, 16.3 per cent continued to suffer pain. The possibility of gastrojejunal ulcer presents a formidable objection to resection for duodenal ulcer, and every effort possible should be made to avoid the operation in such cases.

Hemorrhage: Resection for hemorrhage appears to have little to offer in the general run of cases. The incidence of hemorrhage following resection varies from 10 to 30 per cent, which in most cases, of course, indicates recurrent ulcer or erosions. In other cases, hemorrhages recur because of associated cirrhosis of the liver, while in some a hemorrhagic diathesis may be present. If one is to judge from statistics, the choice of medical or surgical treatment for massive hemorrhage is a difficult one. Crohn reports a mortality, with medical treatment, of 1.8 per cent in patients under 45 years of age and of 9 per cent over 45 years of age. In other reports the figures ascend to 30 or more per cent, depending chiefly on the age of the patient. Surgical treatment affords similarly confusing statistics. Wilkinson and Tracey concluded that medical treatment is justified if the patient has had only one hemorrhage; if there have been two or more hemorrhages, they recommended radical resection as offering a better chance of prevention of further hemorrhage. They found that no form of treatment prevented recurrence of hemorrhage in 25 per cent of cases. Meyer, Sorter and Necheles reported that patients with bleeding peptic ulcer treated by resection had a total mortality rate of 22.2 per cent. Among those past 45 years of age with severe hemorrhage, the mortality rate was 42.8 per cent, while in those under 45 years of age the mortality rate was 30 per cent. Under conservative medical treatment, the mortality rate was 7.2 per cent irrespective of the age of the patient or the severity of the hemorrhage. Among those past 45, the mortality rate was 21 per cent, while in those under 45 there was no mortality. In general, it may be said that resection for

hemorrhage in a person under 45 is seldom justified, especially in the case of duodenal ulcer.

Analysis of the statistics available indicate that resection for benign gastric ulcer carries more promise of relief and protection from recurrence and jejunal ulcer than resection for duodenal ulcer. It carries the added protection of removing the potentially malignant lesion which is so difficult at times to diagnose with certainty before operation. Whether resection is for gastric or duodenal ulcer, the results are favored in proportion to the younger age of the patient and the shorter total duration of the illness. A second resection for any purpose may be expected to prove a disappointment, recurrence and hemorrhage following in its wake in a disappointing number of cases. Aside from the hazard of recurrent ulceration, there are not a few persons who suffer a number of unfavorable symptoms after resection. Berkman and Heck cited the experience of Custer, Butt and Waugh, who made a statistical study of two groups of cases in which partial gastrectomy was performed for peptic ulcer or a malignant lesion of the stomach. In the first group of 500 cases, the incidence of postprandial symptoms was 5.6 per cent, while in the second group of 112 cases, studied at a later date, the incidence was 12.5 per cent. Alvarez expressed the sad thought, after reviewing the literature on surgery for ulcer: If the published hospital mortality rates and percentages of recovery are so discouraging, what must the unpublished ones be? Concerning recurrences, jejunal ulcer and hemorrhage and the other liabilities mentioned, it is my impression that the figures are not improving as time goes on and that subtotal resection may be slowly but surely finding its level with gastroenterostomy.

Unless one is intrigued with the recent reports of nonoperative treatment of perforation as outlined by Taylor, there is little that need be said about this complication of ulcer. Taylor reported excellent results in certain cases of perforation by immediately emptying the stomach by means of an Ewald tube and keeping it empty by continued aspirations. Best results are attained if the stomach is relatively empty at the time of the operation. In skilful hands and under favorable circumstances, there would seem to be no objection to such management of perforation. Generally speaking, however, it would be well for the present to consider this complication a surgical emergency and operate within the first few hours of its occurrence. Eliason and Thigpen, on reviewing 70 cases of perforated peptic ulcer, found that the final end results of simple closure in 22 cases showed a higher percentage of permanent cures (86.4 per cent) than in 21 cases of closure plus primary gastroenterostomy (76.2 per cent). Simple closure seems to be the operation of choice for perforation. Radical surgery, if necessary, should be deferred until the patient can be properly studied and prepared.

Vagotomy: That all is not right with resection is attested by the interest attending the revival of the operation of vagotomy. This procedure essays to cure ulcer by reducing acidity, but in so doing seriously disrupts the secretory and motor mechanisms of the stomach. Dragstedt, Moore, Ruffin, Grimson, Schoen and Griswold, Walters, and others have contributed extensively to this subject, and it is the consensus that the operation is productive of both favorable and

unfavorable results. The favorable results that are emphasized are immediate relief of pain, reduction of acidity, healing of the ulcer and a paucity of recurrences. Such results bear close analysis. It should be pointed out, for instance, that the relief of pain, unless it is accompanied by healing of the ulcer, may become a dangerous liability. This is disclosed in the report of Walters, who called our attention to 2 fatalities from unsuspected perforation following vagotomy. It is already being observed that healing of the ulcer does not always take place and that disturbances of secretion and motility tend to return to normal. Also, at this time it is impossible to determine the probable incidence of recurrences. The unfavorable results of vagotomy are diminished or absent—motility of the stomach, dilatation and retention, epigastric fullness, nausea, vomiting and diarrhea. The dilatation and retention resulting from diminished motility may reach an alarming degree. According to Machella, Hodges and Lorber, it may be relieved by the subcutaneous or oral administration of "urecholine" (carbaminoylethyl-beta-methylcholine chloride). The diarrhea so far has not been troublesome. Its cause is unknown. It could be due to release of the intestinal tonus. This might also explain why so many persons are relieved of an obstinate type of constipation after the operation. An analogous situation exists in the case of the irritable colon which is best treated by antispasmodic measures. The diarrhea could hardly be of a bacterial nature, the result of reducing gastric acidity, as has been suggested, because it does not develop after certain resections of the stomach.

In order to make practical the operation of gastroenterostomy, whether it be one of necessity because of obstruction, or choice to prevent obstruction, resort to the subdiaphragmatic approach for vagotomy is being recommended by Bradley, despite the fact that it is maintained by Miller and Davis, on the basis of an anatomic study, that not all the fibers of the vagi can be reached by this method. Justification for inviting a predicament that requires this operation is difficult for me to understand in view of the disastrous jejunal ulcers and recurrences that followed in the wake of gastroenterostomy and dictated its abandonment some years ago. Undoubtedly, the subdiaphragmatic approach for vagotomy is to be desired, as it provides opportunity (1) to inspect the operative field and determine whether an ulcer is really present; (2) to examine its complicating features, and (3) to be able to supplement the vagotomy with whatever additional surgery may be required.

As far as secretion is concerned, it may be admitted that vagotomy appears to abolish the cephalic phase, but there is no proof that this is the more important phase of secretion. Also, it is not known that the vagus carries all the psychic stimuli from the midbrain. Furthermore, according to Cowgill, there is little doubt that the vagi carry secretory fibers to the pancreas, and stimulation of them results in a flow of pancreatic juice. As pancreatic juice is a factor in controlling hypersecretion and to such an extent that Ivy has made the suggestion that cases of gastric hypersecretion be studied for possible dysfunction of the pancreas, I cannot but wonder in what direction we are heading by sectioning the vagus and disturbing pancreatic

secretion. To confound confusion Cowgill has reminded us that "it is important to realize that the vagi are compound nerves and that there is evidence that all vagal fibers to the gastric musculature do not exert identical effects." That the central vegetative nervous system and its pathways play a significant role in the production of acute gastric ulcer was shown by Boles and Riggs in a pathologic study of 15 cases of acute gastric ulceration associated with primary intracerebral disease. In view of this, it is suggested that such a study be made of sections of the vagus nerves resected for ulcer.

Since it took ten years or more to uncover the ill effects of gastroenterostomy, obviously it is much too soon to appraise the eventual consequences of vagotomy. The direct effects, in the long run, on the stomach, liver, pancreas and small intestine, to say nothing of the indirect effects on the vascular system with the influence of the parasympathetic system obliterated, remain to be carefully evaluated. Of interest in this latter connection is the report by Blegen and Kintner of aggravation of gastric ulcer in 2 patients after dorsolumbar sympathectomy: one patient had repeated hemorrhages during convalescence from the operation and the second had a perforation from which he died, without pain. If a normal degree of gastric tone, motility and secretion could be accomplished by a partial or subtotal vagotomy, which may not be impossible, the operation would hold more promise of cure than the present total vagotomy. At the moment, I am of the opinion that the favorable results of vagotomy are far outweighed by the unfavorable. The possibilities from the operation may be surmised from the direful description given by Komarov, who observed its effects on 142 rats. As a result, he stated "that bilateral vagotomy interferes seriously with a number of essential visceral functions and from a physiological standpoint must be regarded as a grave operation." It may be too soon to form conclusions but not too soon to voice a protest to what has the appearance of becoming a mass experiment on human beings that is fraught with potentially serious and permanent disabilities.

If surgery seems inescapable for the complicated ulcer, subtotal resection, despite its shortcomings, offers a fair chance of relief for the patient, especially when it is done for gastric ulcer. I cannot agree with those who believe that all gastric ulcers should be subjected to resection because of the risk of cancer. Gastric scars are evidence that gastric ulcers do heal. Until healed, they should be regarded with suspicion. If meticulous attention is paid to the patient's subjective and objective symptoms and care taken to correlate them with expert roentgenologic examination, gastric secretory findings and, if necessary, gastroscopic examination, the decision can be made in most cases whether one is dealing with a benign or a malignant lesion. Fewer mistakes would be made in the diagnosis of these gastric lesions if physicians were less complacent in assuming that an ulcer is healing. On the other hand, when an ulcer is not healing, intractability should not be assumed until it has been determined, beyond reasonable doubt, that the patient has been following an appropriate ulcer regimen. In many cases, to say the least, adherence to treatment

has been compromised. I suspect that there are more refractory patients than there are intractable ulcers. They frequently masquerade, one for the other, and should be carefully considered in an appraisal of treatment. A truly intractable ulcer is one that is hopelessly chronic and sclerotic or one that has become adherent to adjacent structures. It is difficult to think of its responding favorably to any type of medical treatment. The refractory patient, on the other hand, frequently complicates the best kind of medical or surgical management. If one is unwise enough to operate on him, he is certain to cripple a good surgical record. Surgery will not cure him and medical management at best will but temporarily appease him. He frequently is the product of an undisciplined childhood and might best be benefited by some hopeful and ambitious psychiatrist.

A model plan of life for patients with ulcer such as has been referred to in principle not only would promote healing, but would minimize the risk of complications and recurrence in most cases. It should be undertaken, however, with the understanding by the physician as well as the patient that infraction means recurrence. I think that we do an injustice to our patients, as well as ourselves, if we allow them to assume that any manner of treatment, be it medical or surgical, will ever permit them to compromise with the ulcer plan of life. They can expect immunity no more than the tuberculous or diabetic patients can from nonobservance of the restrictions placed on them. I realize that this is not in harmony with the advice which many patients are given, that they can eat and do almost anything they please with impunity after their operation. I strongly suspect that such advice is responsible for many recurrences. In the light of our present knowledge, I believe that we should regard ulcer as an incurable disease, but still recognize that it may be held in abeyance by cultivating a new manner of living. With some, this is easy; with others, who are involved in a squirrel cage existence, it is difficult if not impossible. In occasional cases in which the ulcer is adherent to other structures or is so sclerotic that no medical measures can hope to hold promise of recovery, surgical intervention becomes necessary. Under these circumstances, it is advisable to perform as conservative an operation as possible, always with its limitations definitely in mind. Certainly gastroenterostomy, resection, a second resection, supra-diaphragmatic vagotomy, subdiaphragmatic vagotomy and an assorted combination of the lot indicate a lamentable lack of confidence in the surgical management of ulcer and do not augur well for the patient who is faced with an operation for his disease.

And so, in closing, I would express a word of caution. Medical methods for the treatment of ulcer undeniably have their limitations. However, in view of the disillusionments and disappointments attending surgery of the past that wrecked the physiologic mechanism of the digestive tract, let us beware of further innovations in surgery that are not based on sound physiologic principles and do not bode well for the patient. We may justly keep in mind that a poor result from an operation is a failure in the records of the surgeon, but a disaster in the life of the patient. *Aequanimitas!*

Rittenhouse-Plaza.

ABSTRACT OF DISCUSSION

DR. WALTER L. PALMER, Chicago: I have selected three statements from Dr. Boles' paper which build the thesis perfectly. "The crux of the ulcer problem . . . is the matter of cell resistance on the part of the gastric mucosa." Resistance to what? The next quotation is, ". . . cellular resistance depends on the state of the circulation in the stomach and on the chemical composition of the blood reaching the cell." That is part of the answer; the other part is that the resistance of the mucosa depends more on the protective layer of mucus.

Another quotation: "Bachrach, Grossman and Ivy have recently demonstrated that autodigestion of the stomach does not occur if the circulation to the mucosa is adequate and if the metabolic and nutritional condition of the patient is sufficient to maintain the tolerance of the cells to the acid-pepsin secretion and to provide for their regeneration and proliferation and for the secretion of mucus." The crux of the ulcer problem is how to protect the cells of the mucosa against the acid attack. The present trend is to relate this phenomenon to increased secretion of acid gastric juice and increased motility as a result of psychosomatic disturbances. The remarkable results of vagotomy, in which the emotional state of the patient is—shall I say—severed from the stomach by the surgical procedure, would seem to offer strong support for this hypothesis, but whether it is the whole explanation remains to be ascertained. Proceeding from this consideration to the treatment of peptic ulcer, at least 90 per cent of the patients with duodenal ulcer can be treated satisfactorily with the standard medical procedures. With regard to surgical procedures, resection in my judgment is indicated for those gastric ulcers considered carcinomatous or "intractable"; one must be careful if one undertakes to treat a gastric ulcer medically. In duodenal ulcer, operation is indicated primarily for obstruction. I prefer the combination of gastroenterostomy and vagotomy. Time will be required to determine whether jejunal ulcers form after this procedure with significant frequency. The dramatic results of bilateral vagotomy in the treatment of jejunal ulcer recurring after subtotal resection for duodenal ulcer suggest that the recurrence of ulcer after gastroenterostomy and vagotomy will be low.

DR. FRANK H. LAHEY, Boston: I should like to approach an ulcer problem in a patient as I would like it approached in me. I would want to be sure that you physicians had exhausted every possibility of nonsurgical measures. This would include a period of bed rest if for no other reason than to educate the patient in the method of treating himself. It would include impressing the patient with the need of an alteration in his way of life, something that I am sure he has neglected, particularly because the patient wants short cuts and does not know the penalty and price that he may pay for them. If these fail I should like to do a subtotal gastrectomy because it is a seasoned and proved procedure. The mortality in experienced hands is down to about 2 per cent or less, and this even in the cases of most intractable and adherent ulcer. I should like, if it is gastric ulcer, to operate on 100 per cent of them because it is, in my opinion, impossible without serial sections to know whether or not the lesion is malignant. Finally, I should like to reserve vagotomy for those patients who have been through this approach to the problem. If after a subtotal gastrectomy a gastrojejunal ulcer develops, I would then feel that the seriousness of another subtotal gastrectomy and the possibility of another recurrent ulcer would more than offset the unknown hazards of a vagotomy in this case. I do not want to employ this operative procedure with unknown consequences with any routine frequency at least until more evidence has collected. This debatable procedure may with time prove to have too many undesirable sequelae to make it valuable in anything more than in selected cases. There is one other condition in which we have applied vagotomy, and that is in those patients with duodenal ulcer who have bled repeatedly and on whom subtotal gastrectomies are to be done for bleeding. The incidence of recurrent bleeding has been so high in these cases that we have felt justified in adding infradiaphragmatic vagotomy to the subtotal gastrectomy in cases of peptic ulcer of this type. Our gastroenterologists do not agree with us whole-

heartedly regarding the question of submitting all patients with gastric ulcer to subtotal gastrectomy, but the reason I feel so strongly about it is that it is impossible to get patients who are under medical treatment back for observation often enough so that they do not occasionally return with inoperable carcinoma. The figures for cancer of the stomach are so bad and the mortality for subtotal gastrectomy for ulcer is so low that I feel that if I had a gastric ulcer I would accept the risk of subtotal gastrectomy with its almost absent mortality as opposed to the risk of malignant degeneration in the ulcer. Subtotal gastrectomy for duodenal ulcer, particularly in the type which is adherent to the head of the pancreas, and to the common duct, is a difficult and dangerous operation. Vagotomy is a simple and easy operation, but I plead against its promiscuous use by any one unable to do it well or to follow it accurately.

DR. A. F. R. ANDRESEN, Brooklyn: Dr. Boles has done a great service in presenting this review of ulcer therapy. I agree with practically everything that he said. He mentioned that at autopsy, multiple scars of ulcers have been found, attesting to the healing of ulcers. Any one who goes to the trouble of having repeated roentgenograms done on patients will see how rapidly an ulcer heals completely, most of the time without even evidence of scarring. We know from history taking that patients have self-limiting recurrent attacks of ulcer and that they have no symptoms between the attacks, and if we take roentgenograms between the attacks, we know that no ulcers are found. We know that practically all ulcers are accompanied by an increase in acidity. Is it possible that this sudden increase in secretion of acid may be a protective phenomenon, and that the acid helps to clean out the base of the ulcer and improve healing? Lewis Gregory Cole, years ago, demonstrated that the ulcer is the result not of lowered resistance of the mucosa to acid but of an actual necrosis of mucosa which is, of course, not protected from the acid secretion and is therefore digested out. Complications have been mentioned, and I think that the most frequent complication, the one that causes true intractability as shown by roentgenograms, is the so-called slow perforation, the perforation which is walled off by adhesions to the pancreas or to some other neighboring organ or which is covered up by omentum. Such a perforated ulcer will not heal by any medical methods, and will usually require operation. Unless conditions known to cause ulcer are eradicated, we cannot expect to prevent ulcers from recurring. We know that actual infection is not often the cause of ulcer, but the relation between ulcer and focal infection is becoming more and more evident. The formation of ulcer is probably due to some histamine-like substance absorbed from the focus which causes the end artery obliteration producing the ulcer. Thorough eradication of focal infections is the surest method of prevention of ulcers.

DR. SAMUEL FRIEDMAN, New York: In 1919, after observing a progressive increase of ulcers of the stomach and of coronary and cardiac disturbances in middle-aged persons, I concluded that the cause was long, hard hours of labor and travel, and became convinced that the work week should be reduced to five days. I urged this idea on the American Federation of Labor, our government and the people. In 1924 the American Federation of Labor adopted the five day week. If people would use to proper advantage these two rest days a week, in intellectual and physical recreation, I believe that many gastric ulcers and heart troubles would be obviated. When a man leaves his work in pain and goes away for a rest, he eats anything and feels all right. When he comes home and begins to worry about his bills and his business he again gets pains in the stomach or around the heart. I tell these persons, "Go away every week or every other week for two or three days. Forget your business troubles." By sensibly observing the weekly two day rest, I am sure we can limit the formation of ulcers and their recurrence and prevent a great many attacks of angina pectoris, coronary thrombosis and cardiac dilatations, if we but observe the five day week and the Tenth Commandment.

DR. ASHER WINKELSTEIN, New York: We agree with Dr. Boles in practically everything except his central thesis, namely, the unimportance of the "acid factor." Peptic ulcer is probably a psychosomatic disease in most cases. However, whatever

the ultimate cause of ulcer may be, it must be admitted that the immediate mechanism of its production in the stomach is the action of hyperchloric acid and pepsin on a susceptible mucosa. Ulcer adjacent to ectopic gastric secretory tissue in a Meckel diverticulum is striking evidence of the importance of the acid factor. Whatever dispute there may be about the etiologic significance of acid and pepsin, there should be little doubt about their central importance in the problem of ulcer therapy. The important older studies of Walter Palmer at the University of Chicago and recently of Professor Pickering of England have shown conclusively that the pain in ulcer is produced by crises of increased gastric acidity. The control of this acidity by the Sippy therapy in the daytime and by the drip therapy at night has stopped ulcer pain. The acidity at night, as we have repeatedly demonstrated, is high in duodenal ulcers. We have shown that the symptoms disappear and the ulcer heals best when this acidity at night is controlled by the intragastric drip therapy. Despite Dr. Boles' comment, I wish to state that we have treated several hundred patients with ulcer easily and successfully with my continuous intragastric drip therapy. Dragstedt has recently shown that the diminution of this secretion at night by vagotomy cures peptic ulcer rapidly and perhaps permanently in most cases. Our studies at the Mount Sinai Hospital have shown a night achlorhydria in 54 per cent of patients with duodenal ulcer who had gastroenterostomy combined with vagotomy, and in 94 per cent of patients with duodenal ulcer who had subtotal gastrectomy combined with vagotomy. This achlorhydria guarantees against a recurrence. Our earnest belief today is that the medical induction of continuous achlorhydria by the drip therapy, particularly during the night, and the surgical induction of an achlorhydria by the addition of vagotomy to gastroenterostomy or subtotal gastrectomy have gone far to solve the problem of the medical and surgical treatment of peptic ulcer. We subscribe to the dicta, "no acid, no ulcer"; "control of free acid, then rapid healing of ulcer"; "no postoperative free acidity, no recurrent ulcer." It does not seem advisable at the present time to relegate the acid-pepsin factor in ulcer to the realm of forgotten or fruitless theories.

DR. RUSSELL S. BOLES, Philadelphia: Dr. Palmer, I would not say that we had any serious disagreements concerning this subject. I want to reiterate, however, that I believe the matter of cell resistance comes ahead of the matter of acidity, and I subscribe to the belief that cell resistance depends on an adequate circulation to the mucosa of the stomach, as has been demonstrated, as Dr. Palmer quoted me in saying, by Ivy and his group as well as others. Dr. Palmer apparently got the impression that I did not use antacids. Of course I use antacids in the treatment of ulcer. I believe, however, that antispasmodics and sedatives are more important. I am not a therapeutic nihilist in any sense of the word in this matter of ulcer, and I believe antacids in the treatment of the acid, which is a contributing cause and an important one in ulcer, are very necessary. It never seems to happen that Dr. Lahey says anything with which we can disagree. I will, however, comment on his statement that all gastric ulcers should be resected. I believe that if meticulous attention is paid to the subjective and objective symptoms of these patients and those symptoms are correlated with skillful roentgenologic examination from time to time, and perhaps gastroscopic examination, we can determine whether an ulcer in the stomach is benign or malignant. This matter must be tempered with a lot of common sense. Are you going to feel that you should do a disabling operation, a resection, on 9 patients with benign ulcer who may some day have a gastric cancer—and the chances are that they will not—in order to save one who might slip through your fingers and develop a cancer. We may just as logically do a hysterectomy on every woman with a cervical erosion. Dr. Winkelstein, unfortunately, got the impression that I said that gastric acidity was unimportant. I did not say any such thing. I think, again, it is very important, but I do believe that it is a secondary matter and is apt to be the result rather than the cause of the ulcer and the pylorospasm associated with ulcer. I do not want to give the impression that I believe acid is unimportant. I think that the intragastric drip is effective in controlling acidity. As I said before, however, I think that we can accomplish the same end in other ways.

ORAL PROPHYLAXIS OF RHEUMATIC FEVER WITH PENICILLIN

Resistant Hemolytic Streptococci

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When military populations are undergoing mass chemoprophylaxis with moderate doses of sulfonamide drugs various workers have shown that group A hemolytic streptococci readily become resistant to the drugs. The dosage employed usually varied from 0.5 to 1 Gm. daily. Earlier reports¹ acclaimed these so-called prophylactic dosages of sulfonamide drugs as being effective in preventing outbreaks of infections with hemolytic streptococci as well as recurrences of rheumatic fever. Later it became evident that epidemics of hemolytic streptococcus infections occurred despite prophylaxis as a result of the development of resistant strains.² Increasing the daily prophylactic dose to as much as 2 Gm. failed to check the course of such epidemics.^{2b}

TABLE 1.—Incidence of Streptococci in Throat Cultures of Children With Rheumatic Fever With and Without Penicillin Prophylaxis

	Number of Children
Received penicillin.....	64
Beta hemolytic streptococci.....	17
Alpha hemolytic streptococci.....	37
Gamma streptococci.....	8
None.....	2
Did not receive penicillin.....	50
Beta hemolytic streptococci.....	10
Alpha hemolytic streptococci.....	31
Gamma streptococci.....	6
None.....	3
Total.....	114

While it is known that hemolytic streptococci may readily acquire resistance to penicillin *in vitro*³ and *in vivo*,⁴ there have been no reports to our knowledge on the development of resistant hemolytic streptococci following oral prophylaxis with penicillin of either rheumatic fever or infections of the upper respiratory tract. In fact Lapin⁵ has recently recommended the use of small oral doses of penicillin (25,000 units daily) for prophylaxis of infections of the upper respiratory tract in children, but he reported no laboratory tests for the detection of penicillin fastness.

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This paper is a preliminary report on the occurrence of penicillin-resistant strains of beta hemolytic streptococci in the throat culture of children with rheumatic fever who daily received 100,000 units of penicillin orally for at least five months to prevent recurrence of rheumatic fever. We feel that it is extremely important to report these observations on the development of penicillin fastness because of the present widespread usage of inadequate dosages of penicillin for prophylaxis or therapy in hemolytic streptococcus infections. Furthermore, the development of numerous resistant strains obviously reduces the value of penicillin therapy and may even give rise to epidemics that could not be controlled with penicillin. For example, sulfonamide-fast strains of gonococci are being encountered clinically with increasing frequency, so that the value of sulfonamide drugs in the treatment of gonorrhea is rapidly being nullified.

METHODS OF STUDY

Throat cultures were made of 114 children with rheumatic fever ranging in age from 7 to 11 years. All attended the same special school for children with rheumatic heart disease. Immediately after collection, swabs were placed in thioglycollate mediums and incubated six to eight hours at 37 C. Blood agar plates prepared from citrated human blood were then streaked and incubated aerobically at 37 C. for eighteen to twenty-four hours. Predominant organisms in the throat culture were noted and representative alpha hemolytic, beta hemolytic and gamma or indifferent streptococcus colonies were picked and grown in pure culture for tests of sensitivity to penicillin.

A turbidity test was used to determine the sensitivity of the streptococci isolated. Two sets of serial twofold dilutions of penicillin in ascitic dextrose broth ranging from 5 to 0.0025 Oxford units per cubic centimeter were prepared. Organisms resistant to 5 units were retested with 10 units. The test organism was grown in ascitic dextrose broth for six to eighteen hours at 37 C. or until the turbidity of the culture was equivalent to a concentration of approximately 600,000,000 organisms per cubic centimeter. One tenth cubic centimeter of a 1/1,000 dilution of the test organism was then added to each dilution tube and to a control tube not containing penicillin. Simultaneously, a similar amount of a six hour culture of *Staphylococcus aureus* (strain 209-P) was added to the second set for comparison and to check the potency of the stock penicillin solution used. Both sets were incubated for eighteen hours at 37 C., and the least amount of penicillin (units per cubic centimeter) needed to inhibit growth was recorded.

RESULTS

Sixty-four of the 114 children with rheumatic fever were given an oral dose of 50,000 units of penicillin⁶ twice daily on a fasting stomach from December 1946 to June 1947. The remaining 50 children received no penicillin but were in constant daily contact at school with those receiving penicillin. Throat cultures were made from April to June 1947 so that the test group had received penicillin daily for at least four months prior to culturing. No reactions to penicillin were noted.

Table 1 shows the incidence of the various types of streptococci in throat cultures of the treated and untreated groups. In both groups the type of streptococcus isolated varied from approximately 10 to 100 per cent of the throat culture. In most instances when beta hemolytic streptococci were isolated they represented approximately 50 to 100 per cent of the specimen studied. The incidence of beta hemolytic streptococci

6. Oral penicillin tablets (crystalline penicillin G potassium) provided by the Commercial Solvent Corporation were used.

in both groups closely approximates the normal carrier rate in healthy children as reported in the literature.⁷

Results obtained in tests of sensitivity to penicillin of strains of alpha and beta hemolytic streptococci isolated from the treated and untreated groups of children are summarized in table 2. Strains of beta hemolytic streptococci resistant to 10 or more units of penicillin per cubic centimeter were considered significantly resistant, while the sensitivity of the remainder of the strains which were considered nonresistant ranged from 0.02 to 0.625 unit. The latter figure for nonresistance was chosen because in routine penicillin sensitivity tests of hemolytic streptococci isolated from various infections and healthy carriers not previously treated with penicillin no strains have been encountered which were resistant to more than 0.625 unit. In fact the range of sensitivity of most strains isolated was 0.02 to 0.04 unit. Similarly, the range of sensitivity of strains of alpha hemolytic streptococci which were designated nonresistant was 0.04 to 1.25 units, with most strains sensitive to 0.15 to 0.31 unit. These sensitivity figures are in general agreement with those stated in the literature.⁸ The range of sensitivity of gamma (indifferent) streptococci isolated in this series was 0.04 to 1.25 units. No sensitivity figures on gamma streptococci from untreated individuals are available for comparison.

COMMENT

Although no studies were made on the sensitivity of strains of beta hemolytic streptococci prior to giving penicillin, the finding of 82 per cent resistant to 10 or more units in the group receiving penicillin is significant. As has been mentioned, no strains have been encountered resistant to more than 0.625 unit in routine tests of sensitivity to penicillin prior to drug therapy. It is unfortunate that we were unable to type the strains of beta hemolytic streptococci isolated, but Lancefield typing serums were not available at the time of this study. According to Meads and others^{8a} and Rantz and others,^{8b} group A hemolytic streptococci do not possess any natural resistance to penicillin. On the basis of reports in the literature on the distribution of group A hemolytic streptococci in the throats of normal children⁷ it can be assumed that at least half of the resistant strains isolated in this series belong to group A. The fact that 40 per cent of beta hemolytic streptococci from the group which did not receive penicillin were significantly resistant is probably best explained by the frequent opportunity for cross infection between the two groups since, as has been stated, they were in constant contact for at least four months prior to culturing.

The observation that only about 10 per cent of alpha hemolytic streptococci were resistant to 10 or more units of penicillin in both the test and control groups of children is probably not significant. Greater variability of strains in sensitivity to penicillin and even the occurrence of naturally resistant strains have been reported for this group of streptococci.^{8a, c} Our results

thus far indicate that those alpha hemolytic streptococci which do acquire significant resistance to penicillin, do so more slowly than the beta hemolytic streptococci.

Because our results show the development of significant resistance of beta hemolytic streptococci to penicillin, additional experiments are being planned in which larger oral doses of penicillin will be given daily for prophylaxis against recurrence of rheumatic fever. Throat cultures will be made just before and one month after the administration of penicillin to determine initial sensitivity of the streptococci and the possible development of resistance to the drug. Two recent reports⁹ indicate that 500,000 to 1,000,000 units of oral penicillin daily for six days should be ample in most instances to rid the throat of hemolytic streptococci and thereby avoid the possibility of penicillin fastness. There can be no objections to using these large dosages of penicillin for prophylaxis because of toxicity, as is the case with the sulfonamide drugs.

SUMMARY

Throat cultures for alpha and beta hemolytic streptococci were made for 114 children with rheumatic fever. Sixty-four of the children were given a prophylactic

TABLE 2.—Resistance of Streptococci Isolated from Throat. Cultures of Children Having Rheumatic Fever With and Without Penicillin Prophylaxis

Received penicillin	Number Isolated	Percentage
Beta hemolytic streptococci		
Resistant to 10 units.....	11	82
Nonresistant.....	3	18
Alpha hemolytic streptococci		
Resistant to 10 units.....	4	11
Nonresistant.....	33	89
Did not receive penicillin		
Beta hemolytic streptococci		
Resistant to 10 units.....	4	40
Nonresistant.....	6	60
Alpha hemolytic streptococci		
Resistant to 10 units.....	3	10
Nonresistant.....	28	90

oral dose of 100,000 units of penicillin daily for at least four months prior to culturing in order to prevent recurrences of rheumatic fever. The incidence of beta hemolytic streptococci in both groups closely approximated the normal carrier rate in healthy children as reported in the literature.

Eighty-two per cent of the penicillin-treated and 40 per cent of the untreated groups of children had beta hemolytic streptococci of significant resistance to penicillin present in their throats. The occurrence of resistant strains in the untreated group can probably be explained by cross infection; since the two groups were in constant contact.

Inconclusive results were obtained on the development of significant penicillin resistance by alpha hemolytic streptococci isolated. There was some indication that resistance develops somewhat more slowly than in beta hemolytic streptococci.

It is suggested that larger oral doses of penicillin be used for prophylaxis than is recommended in the literature in order to prevent the development of penicillin-resistant strains.

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ADDENDUM

Since this paper was submitted for publication we have found that 1,000,000 units of oral penicillin given daily for five days is usually ample to rid the throat of hemolytic streptococci and thereby avoid the possibility of penicillin resistance. Moreover, sixteen strains of nonresistant hemolytic streptococci were isolated from throat cultures of 46 children with rheumatic fever and 47 normal children not receiving penicillin. Eight strains of streptococci were isolated from each of the two groups of children.

SURGICAL TREATMENT OF INTRACTABLE UNILATERAL CEPHALALGIA

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The conquest of headache can be accomplished only by separation into various clinical entities and the application to each entity of specific drugs or surgical therapy. The vascular element contributing to the propagation of migraine has been frequently demonstrated. Harris¹ in 1936 pointed out the association of vasomotor changes in the cerebral vessels as demonstrated by scotomas, transient paresis, mental depression and visual field disturbances. Clark, Hough and Wolff² found that headache was due to excessive pulsation and stretching of the walls of the dural and temporal arteries. Penfield,³ Harris and Penfield and McNaughton⁴ caused relief from a migrainous headache by selective section of the upper fibers of the trigeminal root which interrupted the sensory fibers to the dura and scalp traveling beside the blood vessels. However, in Penfield's operation to expose the trigeminal root, he must have severed the middle meningeal and temporal arteries as well. Severe hemicrania has been relieved by cervicothoracic sympathectomy, notably by Love and Adson,⁵ Dandy⁶ and Craig.⁷ However, the follow-up on this procedure is difficult, and it seems that nowhere can consistent results be obtained by this method of approach.⁸

It is well known that the dura, in large part, is insensitive but that fibers from the second and third divisions of the trigeminal nerve course beside the middle meningeal artery. The first division of the trigeminal nerve sends fibers to the midline dural structures. There has never been adequate demonstration, however, of transmission of sensory fibers over the superior portion of the cervical sympathetic trunk. Cervicothoracic ganglionectomy or procaine block has

not reduced the pain on the denervated side, according to White and Smithwick.⁸ Further, Solomon⁹ has not demonstrated a general sympathetic disturbance during the progression of a migraine headache by the measurement of resistance of the skin or following the relief of the headache by ergotamine.

In other words, migraine per se, while apparently a vascular type of headache, still has a shadowy pathogenesis. All the available evidence suggests that the autonomic nervous system is implicated in the abnormal pulsations of the external carotid artery, important in vascular headaches, but the exact pathway of these impulses is questionable. Probably one of the more important contributions in this respect is that of Kuntz,¹⁰ who in 1934 gave a priori evidence that there are sympathetic afferent fibers along the course of the middle meningeal arteries and the superficial temporal arteries by establishing their presence in the adventitia of the external carotid artery. He proved that there were nerve fibers of spinal and vagus origin associated with the cephalic sympathetic nerves as well as with the external carotid artery.

Because of this primary interest in the vascular aspects of migrainous headaches, it was noted with interest that a vascular type of headache, apparently mediated along the temporal artery, caused a paroxysmal unilateral type of pain with radiation into the ipsilateral eye, associated sometimes with reddening of the conjunctiva and occasionally tearing. The temporal artery is tender at the time of the headache and an injection of procaine about the artery will give relief of this pain. Eight such isolated cases have previously been reported by Nadler¹¹ and commented on by Newman.¹²

With this original concept, a search has been made for corresponding headaches. At the present time a series of 72 cases of unilateral intractable cephalalgia has been compiled, in 47 of which surgical treatment has been given. An attempt has been made to keep the pure migraine headache from this series. Twenty-five such headaches have been treated conservatively, and tables showing the relative value of each method of treatment and relative percentage of relief to be expected from each have been prepared (tables 1 and 2). It is evident that conservative treatment affords some 32 per cent of relief and surgical treatment 87 per cent of relief.

It seems best to subdivide the types of unilateral cephalalgia into the following components: 1. Temporal vascular headache, a migraine-like entity, apparently due to afferent sympathetic pain pathways accompanying the external carotid artery and its branches, causing severe unilateral temporo-orbital pain, reddening of the conjunctiva, tearing of the eye and tenderness of the temporal artery, relieved temporarily by injection of procaine about the artery. This syndrome exhibits no shimmering scotomas or gastrointestinal symptoms. It is relieved by section of the temporal artery, although occasionally, if the pain seems more deep seated or severe, the middle meningeal artery is also ligated and divided, a logical procedure when one considers the

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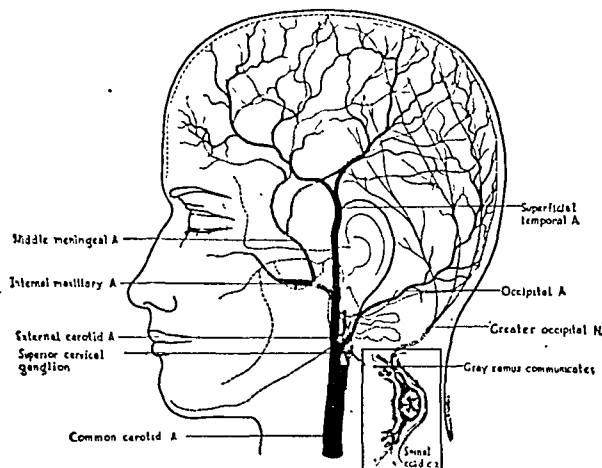
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common source of the two branches. 1 (a). Occipito-temporal vascular headache with radiation of pain extending up over the occipital nerve, along the course of the temporal artery and into or about the ipsilateral eye. This entity may not exhibit the conjunctival reaction or the tearing, but the occipital nerve and the temporal artery are tender to palpation. It is believed due to spinal sympathetic afferents through the greater occipital nerve. Procaine infiltration about the occipital nerve gives temporary relief, and section of the occipital nerve and artery with section of the temporal and middle meningeal arteries gives permanent relief. 2. Cervical radiculitis due to involvement of the occipital nerves by cervical arthritis, peri-arthritis or fibrositis, or even malformation of bone. This pain may be made worse on motion of the neck, and it may be relieved by traction of the neck. A small percentage of patients with this cervical radiculitis reveal by roentgenogram a cervical arthritis. It is possible that a protruded cervical disk might simulate this syndrome. This symptom complex seems to be one of pure mechanical pressure, and the



Apparent sympathetic afferent pathways.

pain is not referred to the temporal region. The pain apparently caused by cervical arthritis or peri-arthritis may be relieved by application of high voltage roentgen therapy to the cervical portion of the spine. A greater number, however, can be relieved by avulsion of the greater occipital nerves. 3. True intractable migraine, consistent as to lateralization, thought to be a vascular headache, mediated along the same pathways but with the added component of vascular imbalance of cerebral vessels.

Examination of the accompanying figure will reveal the autonomic fibers thought to be incriminated in this type of headache. It is true that afferent sympathetic fibers accompanying the branches of the external carotid have not been identified, but it is felt that the work of Kuntz has established their existence. Although there is no direct proof, it is believed that the spinal sympathetic afferents to the greater occipital nerve are incriminated. That this type of pain is not mediated along the occipital artery accompanying the greater occipital nerve has been demonstrated by selective avulsion of the nerve leaving the artery intact with consequent relief of pain.

Three patients have complained of unilateral headache with the usual accompanying symptoms, and have

traced the course of the external carotid artery as they delineated their pain. Carotid pressure relieved the headache and section of the temporal and meningeal arteries has relieved the pain. The external carotid was not divided in the neck because it is not known how many fibers enter its adventitia as it passes through the neck next to the sympathetic chain.

TABLE 1.—Surgical Treatment of Unilateral Cephalalgia

Type	No.	Result			
		Complete Relief	Marked Relief	Some Relief	No Relief
1. Temporal vascular.....	17	13	3	1	0
1(a). Occipitotemporal vascular	18	9	6	3	0
2. Occipital neuritis.....	10	7	2	1	0
3. Migraine.....	2	0	1	1	0
Totals.....	47	29	12	6	0
Percentages.....		61.7%	25.5%	12.8%	0%
		87.2%		12.8%	

While it is not believed that afferent fibers course along the occipital artery, as they apparently do along the temporal or meningeal arteries, it must be noted that the occipital artery is the first branch of the external carotid artery and that it is a possible pathway.

Gardner, Stowell and Dutlinger¹³ have described the surgical relief of a unilateral headache by division of the greater superficial petrosal nerve. This follows the line laid down by Foley,¹⁴ Bruesch¹⁵ and Hinsey,¹⁶ as they described the coursing of somatic afferent fibers from the seventh, ninth and tenth nerves along the adventitia of blood vessels. It is not believed these fibers are involved in the type of vascular headaches described here, although in Gardner's type of headache they may be the main factor. It is believed the pathways herein involved are afferent sympathetic fibers rather than somatic afferent (seventh, ninth and tenth nerves) or parasympathetic (seventh), as Gardner's must be.

On this basis the surgical technic has been developed. It consists of exposure of the temporal artery with the patient under local anesthesia with excision of a portion of the temporal artery between silver clips in an attempt to prevent regeneration of any fibers. The

TABLE 2.—Conservative Treatment, Unilateral Cephalalgia

All Types Except Migraine	No.	Result			
		Complete Relief	Marked Relief	Some Relief	No Relief
Drugs.....	9	0	0	5	4
Roentgen therapy.....	13	0	8	2	3
Cervical traction.....	1	0	0	1	0
Injection with procaine.....	2	0	0	1	1
Totals.....	25	0	8	9	8
Percentages.....		0%	32%	36%	32%
		32%		68%	

incision is then carried through the temporal muscle down to the temporal bone. A bur hole is placed over the middle meningeal artery and is slightly enlarged to

13. Gardner, W. J.; Stowell, A., and Dutlinger, R.: Resection of the Greater Superficial Petrosal Nerve in the Treatment of Unilateral Headache, *J. Neurosurg.* 4: 105-113, 1947.

14. Foley, J. O., and Frible, S. D.: Experimental Study of Seventh Nerve, *J. Comp. Neurol.* 79: 79-105.

15. Bruesch, S. R.: Distribution of the Branches of the Cat's Facial Nerve, *Univ. of Chicago Press*, 1944.

16. Hinsey, J.: Observations on the Sympathetic Nerve, *Ann. Surg.* 119: 169-191, 1928.

allow this artery to be divided and a portion excised between silver clips. The dura is opened between these clips to insure division of any fibers which may have been missed in the excision of the artery. The wound is closed in the usual fashion with interrupted black silk sutures. The hospitalization necessary is usually three days. The occipital nerve may be avulsed with the patient under local anesthesia by a curvilinear incision just lateral to the posterior occipital protuberance. Here the occipital artery, vein and nerve are easily identified. The nerve is rolled up on a hemostat and avulsed for a distance of 3 to 5 cm. The wound again is closed in the usual fashion with interrupted black silk sutures. Neither of these procedures is hazardous, and in trained hands they do not constitute any danger to the patient's life or allow any untoward sequelae. There have not been any fatalities in this series.

Cross section case reports are herein presented in an attempt to demonstrate various points thought to be of importance.

REPORTS OF CASES

CASE 1.—Attention was attracted to the problem by interest in this young soldier, aged 21, who experienced classic symptoms of paroxysmal type of unilateral pain in the right temporal region which radiated into the right eye. It was accompanied by reddening of the conjunctiva and tearing of the right eye. The temporal artery was tender. Injection of procaine about the artery caused a cessation of the incapacitating headache. The temporal artery was ligated and divided and the pain was immediately relieved. The relief has persisted now for six years.

CASE 5.—This soldier, aged 22, was seen in an evacuation hospital in Belgium. He had wounds of the extremities which were not serious, but he was complaining bitterly of pain in his right temple, with projection of the pain into the right eye, accompanied by reddening of the eye and tearing. On examination of the scalp it could be seen that there was a tiny puncture hole just about the zygoma on the right side. A diagnosis was then made, without the benefit of roentgenograms, of a metallic foreign body lying on the temporal artery and causing the typical temporal sympathetic pain by stimulation of the sympathetic afferent fibers. A roentgenogram was taken and the metallic foreign body visualized. A small incision was made over the temporal artery and the foreign body was seen to be lying exactly on the temporal artery, although it had not severed it. The foreign body was removed and the pain disappeared. The temporal artery was not divided or ligated. The patient remained free of pain for the period of follow-up, approximately six months.

CASE 21.—A woman aged 37 complained of severe, intermittent, paroxysmal, unilateral headaches on the left side for the previous four years. They had become progressively worse, and at the time of her first visit they were occurring twice a week and were incapacitating. They were not accompanied by scotomas, visual disturbances or nausea. They were not preceded by an aura. The pain radiated about the left eye. The conjunctiva was not reddened, but occasionally there was some tearing during the height of a headache. The temporal artery was tender on palpation. She had been treated with ergotamine tartrate, histamine and nicotinamide. The only relief to be obtained came from morphine or dihydromorphine hydrochloride. A diagnosis of temporal vascular headache was made and the temporal artery and the middle meningeal artery divided and portions excised with the patient under local anesthesia. The relief of the pain was immediate and has persisted for twelve months, with the exception of an occasional generalized, mild headache, relieved by acetylsalicylic acid.

CASE 32.—This patient, a man aged 27, had had severe, intractable, unilateral headache for the previous eighteen months. It began at the base of the skull on the left side and radiated up over the ear along the course of the temporal artery and

occasionally about the left eye. The pain was severe and incapacitating and occurred two to three times a week. It was paroxysmal. On examination, the temporal artery and the occipital nerve on the left side were tender to palpation. No pathologic condition in the cervical part of the spine was observed by roentgen examination, and it was not tender to palpation. Accordingly, the temporal artery and the middle meningeal artery on that side were ligated and portions were resected. The occipital nerve was exposed and avulsed for a distance of 4 cm. The patient had an immediate relief of his headache, and has remained free from pain for the past twelve months.

CASE 36.—This white woman, aged 42, complained of pain beginning in the upper cervical portion of the spine, radiating up over the occiput along the course of the right temporal artery and just above the right eye. The temporal artery was tender to palpation, the occipital nerve was tender and motion of the neck caused the pain to be worse. There was tenderness between the spinous processes of the second and third cervical vertebrae. The pain was incapacitating and was almost continuous, although she felt that it became worse at times. Roentgenograms of the cervical portion of the spine revealed minimal arthritis of the entire cervical part of the spine involving the facets.

The temporal artery and middle meningeal artery were ligated and portions were resected. The greater occipital nerve was avulsed for a distance of 5 centimeters. Relief of the pain was immediate and persisted for the past eleven months. The cervical part of the spine, however, has remained somewhat painful to motion, and the tenderness between the second and third vertebrae has persisted. This pain, however, is not incapacitating or severe. The headache has been relieved. She had previously had treatment by means of roentgen therapy directed to this region and traction on the neck.

CASE 41.—This woman, aged 35, had been suffering from typical migraine headache confined to the right side, precipitated by an aura of blurring of vision. The severe unilateral headache was accompanied by shimmering scotomas and nausea. There was a family history of migraine. It occurred once or twice a week, necessitating confinement to bed.

She had had treatment with histamine desensitization, ergotamine tartrate and nicotinamide, and a search had been made for some offending protein by the allergists, all to no avail. She felt that she was incapacitated. The pain seemed confined to the right temporal region and there was no indication of any involvement of the greater occipital nerve. Accordingly, the temporal artery and the middle meningeal artery were resected in the usual fashion. The headaches were relieved. At the period of three months, she began to have an occasional mild type of hemicrania which could be relieved by the use of acetylsalicylic acid. This headache would last only two to three hours. It was accompanied by scotomas and by nausea. The great component of a severe and incapacitating headache, however, was missing.

CASE 46.—This man, aged 29, had the usual typical paroxysmal type of unilateral pain, accompanied by tenderness of the temporal artery and reddening of the conjunctiva and tearing of the eye. The occipital nerve was tender and the temporal artery was tender. The pain was incapacitating, occurring two to three times a week, necessitating confinement to bed. He had been treated with ergotamine tartrate, roentgen therapy to the cervical part of the spine, nicotinamide and desensitization with histamine.

It was felt that he fell into the category of sympathetic headaches, and accordingly his greater occipital nerve, the temporal artery and the middle meningeal artery were all resected. He had a good result which lasted for four months. The pain began to recur, although to a milder degree. He was then placed on nicotinamide, and while it had been a complete failure prior to operation, it afforded complete and lasting relief after the operation. This experience has been noted since, and it is found that the occasional mild headache which might recur after surgical treatment may be relieved by the use of nicotinamide.

COMMENT

Reference is made to the accompanying chart. It has been found in this series of 47 surgical cases that 87 per cent of these patients obtain a pronounced degree of relief from their severe, intractable, incapacitating unilateral cephalalgia. Conservative treatment affords 32 per cent relief. While surgical treatment may be applied to migraine in some cases, an attempt has been made to keep the true migraine from this series. An analysis has been made of the nervous pathways. Surgical technic has been described and the results thereof with a follow-up period have been presented.

SUMMARY

An attempt has been made to classify intractable, unilateral cephalalgia into three entities: (1) temporal vascular headache due to afferent sympathetic pain fibers accompanying the external carotid artery and its branches, associated with severe, unilateral pain, reddening of the conjunctiva, tearing of the eye and tender temporal artery; (1 a) occipitotemporal vascular headache with radiation of the pain up over the occipital nerve, along the course of the temporal and middle meningeal arteries; (2) cervical radiculitis due to mechanical pressure on the greater occipital nerve, and (3) true intractable migraine.

CONCLUSIONS

If a unilateral cephalalgia is truly intractable to conservative measures, then it seems logical by means of an innocuous surgical procedure to relieve the pain by means of rational treatment along physiologic lines.

Study of the pathways involved and the relief of the pain following surgical intervention directed at these pathways causes me to feel that there are sympathetic afferent fibers traversing the branches of the external carotid artery, namely, the temporal artery and the middle meningeal artery and possibly the occipital artery, and that these fibers are incriminated in the propagation of the vascular headache described.

Eighty-seven per cent of the patients given this diagnosis and surgically treated have been given lasting relief.

ABSTRACT OF DISCUSSION

DR. ROLAND P. MACKAY, Chicago: We are grateful to Dr. Haynes for drawing attention again to the surgical treatment of unilateral headache, a subject which has been discussed frequently, but perhaps too often forgotten. The essence of his problem is diagnosis. We know that the vast aggregation of headaches are difficult to separate one from another. Actually, the diagnosis of migraine itself is nearly always a matter of opinion. I am not so sure—not to be critical—that Dr. Haynes can always tell when he has a case of unilateral cephalalgia as distinguished from migraine. One has to remember, too, the facial pains of nondescript types which puzzle one. Some of these, I believe, are due to organic diseases which involve the various branches of the fifth cranial nerve; for example, syphilis, tumors and other pathologic conditions. We must not forget the great number of pains in the face and in the head which are of emotional origin, the so-called tension headaches or tension pains. These are usually not difficult to diagnose. May I ask Dr. Haynes whether it is necessary for him to sever the artery rather than to strip the wall of the artery and so sever the accompanying nerves? In other words, why not do a Leriche periarterial sympathectomy? May one not spare the artery in such an operation? We must realize that surgical treatment of pain in the head of this type is actually only symptomatic treatment. We must try, of course,

to discover and treat the cause in each case. With all of these qualifications and doubts, perhaps there still will remain a large number of patients for whom Dr. Haynes' approach will be of great value.

DR. PAUL BUCY, Chicago: Dr. Mackay has pointed out the diagnostic difficulties which the problem presents. The difficulties of treatment are equal to those of diagnosis. This type of attack is not new, and one which a number of persons have used in headaches of this type, as well as in migraine, in which many of us believe that the pain is of vascular origin. Recently Dr. Watts of Washington attempted section of the temporal artery with headaches of this type. Dr. Wolf of New York has attempted it, unfortunately, with failure. The latter has been the experience of most of us. That perhaps is not surprising, in view of the fact that the vascular phenomena associated with this pain, and probably responsible for it in a considerable measure, are not limited to the distribution of one artery, although they may be limited to the vascular supply of one side of the head or face. Therefore, a division of the temporal artery is likely not to give relief in many instances.

Certainly in instances in which pain can be relieved completely by the injection of procaine into the region of the temporal artery, the attack which has been advocated by Dr. Haynes is well worth trying.

DR. WALTER G. HAYNES, Birmingham, Ala.: In answer to Dr. Mackay's first queries, I try to limit the surgical treatment to those patients whose cephalalgia is truly intractable and to those who have been given a thorough and rather lengthy course of conservative medical treatment. It would be technically rather difficult to attempt a Leriche type of periarterial stripping of the temporal artery and the middle meningeal artery. Both are small arteries. Their function is of little prime importance, and their sacrifice means very little. As to the diagnosis, I am fully cognizant of the fact that I may have included other types of headaches in this series. I attempted not to, however. Two patients with true migraine did creep into the series. That diagnosis became obvious after the operation had been done. Most of these patients had been referred to me by psychiatrists who had followed them for some time. They had been convinced, as was I, that these were not a tension type of headache; that is, that they were not a neuropsychiatric problem. I will try to answer Dr. Bucy's question by saying that I have attempted to limit the surgical treatment to those patients in whom the three available arteries seem to be clinically involved and to whom injection by procaine about at least the temporal and occipital artery gave some relief.

Blood Transfusion.—The giving of Rh-positive blood to a Rh-negative recipient with preformed Rh antibodies in the plasma will result in the haemolysis of the transfused corpuscles. If the Rh-positive corpuscles are broken down rapidly, a dangerous, and sometimes a fatal, reaction occurs. If they are haemolysed more slowly, the patient may escape a severe reaction, but will fail to derive the maximum benefit from the transfusion. Moreover, the Rh antibodies will be considerably increased in potency, so that unless due precautions are taken, a subsequent transfusion may prove fatal. Such recipients will tolerate only blood that does not contain the offending Rh antigen, i. e. Rh-negative blood. . . . In 10 per cent of all pregnancies the foetus is Rh-positive and its mother Rh-negative. In certain instances the Rh-negative mother will react to the presence of the Rh-positive foetus as if she had received a transfusion of Rh-positive blood, and Rh antibodies will appear in her plasma. The placental barrier is freely permeable to these antibodies, which pass over into the foetal circulation and there react with the Rh factor in the baby's corpuscles and tissue cells. As a result of the interaction of Rh antigen and antibody in utero the baby suffers from a condition now known as haemolytic disease of the newborn (erythroblastosis foetalis). Haemolytic disease of the newborn complicates one in every two hundred to two hundred and fifty pregnancies, and is responsible for more deaths than any other inherited condition, perhaps more than all other inherited conditions together (Haldane, 1943).—Tovey, Geoffrey H., M.D.: The Rhesus Factors-I, *The Bristol Medico Chirurgical Journal* 54:68-73, Autumn 1947.

NUTRITION AND ENDOCRINOLOGY

With Special Reference to the Nutrition of the Mexican Indian

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For the general practitioner, it is difficult to follow the lines of development of medical ideas in the different fields of medicine unless extreme care is taken in the presentation of facts and of doctrine. One must always bear in mind that the division of subjects in different branches of medical knowledge and their classification is done only for convenience, and does not exist in nature. Such is the conception of separation between nutrition and endocrinology and the classification of nutritional disorders into "exogenous" and "endogenous"; by "exogenous" those cases are meant which are caused by the ingestion of an excessive or an insufficient amount of food and by "endogenous" those derived from an endocrine disturbance.

It is true that one may find some cases which can be really recognized as exogenous and, in the other extreme, cases which can be recognized as endogenous, but such clearcut classification breaks down if it is recognized that the quantity and quality of food affect the function of the endocrine glands, so that exogenous disturbances sooner or later become mixed with endogenous disturbances.

The influence of food on the endocrine glands is gradually becoming known. It is not a new notion and the subject is so extensive that I cannot undertake to review it.

The first mention of an endocrine gland was made by Claude Bernard, the great French physiologist, who established that the liver was capable of pouring dextrose into the circulation in accordance with the need of the organism and that this substance was derived from glycogen stored in the liver cell.

More recently it was shown that lack of iodine in food led to a functional and even an anatomic disturbance of the thyroid gland.

"EXOGENOUS" AND "ENDOGENOUS" DISORDERS

For a long time evidence has been sought in favor of an "exogenous" origin of many cases of diabetes, which usually are preceded by obesity and in which the role of the pancreatic gland and even the pituitary gland cannot be denied.¹

Many cases which clinically resemble Froehlich's syndrome have been shown to be of exogenous origin and can be cured or at least favorably modified by diet without the use of therapeutic hormonal preparations.

Many cases of anorexia nervosa have been described as clinically indistinguishable from "true" hyperpituitary cachexia or Simmond's disease.²

So startling have been some of these observations that some have been carried to the extreme of saying that true endogenous obesity is rare and that there is no form of obesity that cannot be modified by diet.

The influence of food on the glands of internal secretion is not strange. All organs in the body are affected by food, and there may be grounds for believing

that the endocrine glands may be specially sensitive to variations in food consumption.

On the other hand, there is the possibility that a lack of certain nutrients may produce an effect which may be similar to a dysfunction of a certain gland. An example of this can be given in the clinical resemblance of cortical insufficiency to the picture produced by dehydration of exogenous origin.

If one accepts this point of view, there may be a parallelism between clinical pictures differing in etiological significance.

CLASSIFICATION OF DISTURBANCES DUE TO INSUFFICIENT NOURISHMENT

There are difficulties which arise from difference in nomenclature, which sometimes results from a tendency either to oversimplification or to excessive analytic diversification.

In this respect, I find it difficult for the American school to understand the European nomenclature and vice versa, as here in America oversimplification has led to the grouping of disturbances of insufficient nourishment in only two concepts: undernutrition and malnutrition, while in Europe there are terms like "athrepsia," "atrophy," "decomposition," "dysergias" and "dysontias," from the old French school of Parrot,³ from Finkelstein and from Bessau,⁴ which are not understood in America.

There are to my mind many reasons for reclassifying these disorders, and I hope that you will not find it presumptuous on my part to present this attempt of classification.

The disturbances caused by insufficiency of nourishment may be classed as (1) undernutrition, (2) malnutrition and (3) hypoproteinoses. You are familiar with the first two. The term undernutrition must be restricted to a deficiency in calories which produces loss of weight and reduction of fat deposits. This condition is usually seen in times of war or disasters which disrupt the distribution of food in the world. Malnutrition means a vitamin deficiency. I need not mention the different forms that it can assume in accordance with the particular vitamin involved.

Hypoproteinoses means a deficiency of protein food or of good quality proteins, or a deficiency of essential amino acids. It is the most common disease in the world, and yet it has not even a name in the accepted medical nomenclature.

HYPOPROTEINOSIS

The outstanding cause of hypoproteinoses is the low economic level on which half of the population of the world lives. This economic want leads to the suppression from the diet of the most expensive foods of animal origin, usually badly compensated by an excess of carbohydrates derived from the cheapest cereals or tubers: rice, corn and cassava.

It is usually a chronic condition difficult to overcome and is essentially different from the plight of the people under the stress of war or famine, which is usually acute and may be remedied by emergency measures, chiefly by cereals.

It is true that undernutrition, malnutrition and hypoproteinoses may be found superimposed, as now happens in China and India, because to the chronic lack of good quality proteins there is added a lack of certain vitamins, and also an insufficiency of carbohydrates and fats.

Address of the invited foreign guest read before the Section on General Practice of Medicine at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

1. Kisch, E. H.: *Der Diabetes der Altersden*, Med. Klin. 11: 163, 1915; abstracted, J. A. M. A. 64: 1038 (March 20) 1915. Joslin, E. P.; Root, H. F.; White, P., and Marble, A.: *Treatment of Diabetes Mellitus*, ed. 7, Philadelphia, Lea & Febiger, 1940, p. 68.
2. Farquharson, R. F., and Hyland, H. H.: *Anorexia Nervosa*, J. A. M. A. 111: 1085 (Sept. 17) 1938.

3. Parrot, J. M.: *Clinique des nouveau-nés: L'athrepsie*, Paris, G. Masson, 1877.

4. Bessau, G.: *Ernährungsstörung*, Monatschr. f. Kinderh. 63: 4, 1935.

The extreme condition of lack of all kinds of food leads to inanition, which is usually spoken of as hunger.

But it is conceivable that the most frequent of all these conditions of want is that produced by insufficient protein or essential amino acids.

It happens, though, that one frequently refers to hypoproteinemia and not to the hypoproteinosis, although hypoproteinemia, connected with edema, is not a disease in itself but a sign of the general condition of hypoproteinosis, and an inconstant sign, as I will explain later.

This condition of hypoproteinosis in its dry form has been ignored because what is known about it has not been gathered in a coherent description but lies scattered in different chapters, and because physicians have ignored old descriptions of this disease just because they are not up to date in their information.

It is, moreover, a fact that hypoproteinosis in its dry form is difficult to recognize in an individual though easy to recognize as a disease of the community, as a public health problem.

If one analyzes the data found in vital statistics of countries or regions where hypoproteinosis exists one finds (1) a high general mortality, (2) a high infant mortality, (3) a high mortality for infectious diseases of childhood, (4) a high incidence of gastrointestinal disorders, (5) a high natality index and (6) low figures of height and weight of the population.

A glance at these general facts leads one to certain corollaries: 1. Hypoproteinosis is a condition which specially affects children before 6 years of age. 2. It affects them by (a) a tendency to stop or delay growth, (b) a tendency to diarrhea and (c) a low resistance to infection.

Growth is considered by nutrition workers one of the best criteria for the assessment of the protein value of foods. The growth of young rats is perhaps the best method of biologic appraisal of protein values.

But it happens that it is difficult to distinguish between racial and acquired characteristics. It is easy to create a good strain of rats with known biometric constants, but men differ widely from one another and it is easier to believe in race superiorities and inferiorities than to believe in the effect of food on racial development. And yet Scandinavians of today are 10 cm. higher in stature than their ascendants of one hundred years ago.

Height is a better index of protein nutrition than weight, which is rather an index of caloric deficiency.

Some years ago I pointed out to my students and also to my colleagues in the Academy of Medicine in Mexico that delay in growth caused by protein deficiency was similar to that caused by pituitary deficiency. This has been stressed by the observations of Dr. Rigoberto Aguilar.⁵

The studies of Cannon⁶ have led to the knowledge that growth retardation may be caused by deficiency of any of the essential amino acids.

Growth is essentially a sign of positive nitrogen balance, and the nutritional added requirement of food for growth purposes must be specially those of protein food.

The resemblance of the clinical picture of pituitary nanism to that of hypoproteinotic nanism is a fact which

may be interpreted in several ways: One could accept that for normal growth two essential conditions are necessary, proper nutrition and the function of the anterior pituitary. If either one of these conditions is lacking, the effect is the same.

But one could also consider the possibility that protein deficiency affects the pituitary gland. Most of the pituitary hormones are of a protein nature, and one can conceive that these proteins cannot be synthesized without a proper protein nutrition.

Low resistance to infection is manifested: (1) by the frequency of infections in hypoproteinotic children; (2) by the special severity of these diseases, so as to be a cause of high mortality even in usually benign infections such as measles and whooping cough, and (3) by a special course of the infectious disease itself, as for example, the absence in severe infections of fever and other body reactions such as leukocytosis and other immunity responses.

Kolmer⁷ stated that "the proteins of the diet are apparently just as important in the synthesis of natural specific antibodies (and presumably of the nonspecific bactericidal beta lysins, leukins and plakins of the blood) as they are in the synthesis of acquired antibodies, whereas A, C, D avitaminosis may favor infection through changes in the epithelial barriers, body secretions or other nonspecific factors."

He went on to say that "unless the nutrition of pregnant women is favorable to antibody production, the immunity of newborn infants, so likely to be classified as natural immunity, though actually a type of acquired immunity, will be deficient."

The findings of Heidelberger and collaborators⁸ identifying antibodies as molecules of globulin which in the course of their synthesis have been specifically modified by the antigen and the conception of Sabin,⁹ who defined antigens "as substances which can specifically modify the synthesis of globulins by the cells of the reticuloendothelial system" led to the theory postulated by Cannon¹⁰: "gamma globulin production is dependent on the intake of amino acids from proteins."

More recently experimental studies by Dougherty and White¹¹ and others have called attention to the lymphocyte as the special cell in which gamma globulins are synthesized and to the fact that, aside from the intracellular production of antibodies, there is another necessary step, the release of these antibodies by the dissolution of the lymphocytes, which is produced by the action of the steroids of the corticoadrenal gland which are oxygenated on carbon 11.

Indirectly this action may be caused by the adrenotropic hormone of the anterior pituitary.

One may then say that for the presence of antibodies in the blood two conditions are necessary, apart from the antigenic action: an adequate protein nutrition and an adequate function of the pituitary and adrenal glands.

If one now examines the tendency of the hypoproteinotic child to gastrointestinal disorders, especially to

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7. Kolmer, in Wohl, M. G.: *Dietotherapy: Clinical Application of Modern Nutrition*, Philadelphia, W. B. Saunders Company, 1944, p. 515.

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9. Sabin, F. R.: Cellular Reactions to a Dye Protein, *J. Exper. Med.* 70: 67, 1930.

10. Cannon, P. R.: Antibodies and the Protein Reserve, *J. Immunol.* 44: 107, 1942.

11. White, A., and Dougherty, T. F.: Role of Lymphocytes in Normal and Immune Globulin Production, and Mode of Release of Globulin from Lymphocytes, *Ann. New York Acad. Sc.* 46: 859, 1946; Influence of Pituitary Adrenotropic Hormone on Lymphoid Tissue Structure in Relation to Serum Proteins, *Proc. Soc. Exper. Biol. & Med.* 56: 26, 1944. Dougherty, T. F., and White, A.: Functional Alterations in Lymphoid Tissue Induced by Adrenal Cortical Secretion, *Ann. J. Anat.* 77: 81, 1945.

diarrhea, one may say that this tendency was recognized by Parrot³ in his description of "athrepsia" seventy years ago; he stated that "the initial fact is a modification of the feces which, more frequent and softer than normal, cease to be yellow and homogenous, to present white curdles and greenish striations."

He went on to say that "at the same time the quantity of the urine decreases and its color is darker, the thirst is more vivid and by its cries, the infant demands more frequently its satisfaction, but . . . notwithstanding the frequency of meals, the quantity of milk it drinks is less than the normal dosis."

Schweizer¹² also recognized this tendency to diarrhea as one of the characteristics of "dysontic" children, following the school of Bessau.⁴

What has happened is that, under the influence of the discoveries of Pasteur, physicians have a tendency to think of infection as the most common cause of gastrointestinal disorders of childhood, and in a natural way have been led to believe that gastrointestinal disorders are the cause and not the consequence of the nutritional disturbance.

It is true that diarrhea complicates the picture, bringing about the addition of undernutrition, malnutrition and dehydration to the original picture of hypoproteinosi, and even concealing this original disturbance under the more conspicuous signs of the added derangements, but the theory that, at least in some of the cases, diarrhea is not of infectious origin, but nutritional in character, is, to my mind, not only acceptable but highly probable.

These gastrointestinal upsets are a constant sign in cases of hypoproteinosi. Gómez Pagola¹³ has found them in 100 per cent of 500 cases studied by him in the Children's Hospital in México, D. F.

Infant mortality is higher in those regions of Mexico which are of low agricultural productivity, the highlands situated higher than 5,000 feet (1,524 meters) above sea level, while richer regions under 5,000 feet, though more favorable for tropical infections, have a lower infant mortality. The relation of poverty to infant mortality is thus clearly proved.

It seems highly probable that these gastrointestinal symptoms may be connected with a fatty liver.

Gillman and Gillman,¹⁴ of South Africa, have recently shown that children afflicted with "pellagra" do not react favorably to vitamin treatment, while administration of powdered stomach gives the best results. They have studied the degree of fatty infiltration of the liver in smears taken from biopsy specimens of liver and have been able to find a relation between the degree of infiltration and the severity of symptoms.

Fatty infiltration of the liver cell is an important consequence of hypoproteinosi. The amino acid methionine has been found to be indispensable for the synthesis of choline¹⁵ as a source of methyl groups or, as the process is now called, for transmethylation.¹⁶ Powdered stomach and powdered pancreas are rich in methionine.

The only criticism that can be made of the work of Gillman and Gillman is of the error of referring to these children as pellagrous patients. Pellagra is not the cause of this type of diarrhea and is not the chief underlying factor, but hypoproteinosi. Pellagra is a complication of the disease.

Parrot³ described in an impressive manner the picture of the later stages of athrepsia, a form of the disease in which dehydration is the most important feature or, as he said: "the organism suffers from aridity."

He described the excavation of the orbits, the depression of the fontanels, the bones of the skull mounting on one another, the lividity around the mouth and the imperfect closing of the eyelids, which enables one to see the diminished ocular globes, with their dull dry corneas and injected conjunctival membranes.

But nowadays dehydration is too well known not to be remedied, and one's attention is engaged more frequently with the opposite picture of generalized edema, which is usually accompanied with the symptoms of malnutrition, xerosis, pellagra and ariboflavinosis being the most frequent among the vitamin deficiencies.

Nevertheless, one still frequently sees a picture which, it seems to me, has many points of contact with Simmond's cachexia as produced in adults in cases of anorexia nervosa, which can be characterized as the bankruptcy of the organism.

One cannot but remember that Parrot described athrepsia as "nutrition in reverse" and that the anterior pituitary and the adrenal cortex are the agents for conversion of protein into glycogen: When this mechanism is exhausted, bankruptcy is declared.

Hypoproteinosi and dehydration are still often encountered together. Parrot used to say that "in order that the chemical phenomena of nutrition may take place, it is necessary that the internal medium be humid, that plasma may be abundant. The impoverishment of its plasma and, if it is permissible to say, its concentration, are accused by cyanosis and the relative increase of red blood cells. The blood dyscrasia is the capital feature of athrepsia."

When one now characterizes shock by blood concentration, just as Selye¹⁷ spoke of his "alarm reaction" as being the expression of shock, provoked by the exposure to stimuli to which the organism is not adapted, and of hunger as one of the most frequent causes of shock, one associates corticoadrenal insufficiency with the picture of dry hypoproteinosi.

One cannot but recognize the truth of the following words of Duncan¹⁸ in his book on "Diseases of Metabolism":

The reduction of the concentration of protein in the serum is an inadequate measure of the actual albumin deficit. As the albumin diminishes, the plasma volume shrinks, presumably because the protein osmotic pressure drops. As the process continues a compromise is, as usual, reached between plasma volume and protein concentration by the interaction of compensatory mechanisms. Analysis of the bodies of animals reveals the fact that the tissues are the greatest sufferers of all. Before serum albumin becomes sufficiently depleted, therefore, to cause edema, the tissues and organs throughout the body have been drained of protein. . . . The retention of 1 Gm. of nitrogen causes the organism to add 25 Gm. of weight, because 6.25 Gm. of protein will be formed from the gram of nitrogen and the protein will require and hold three times its weight of water.

12. Schweizer, F.: *Trastornos nutritivos del lactante*, Buenos Aires, 1941.

13. Gómez Pagola: Unpublished data.

14. Gillman, T., and Gillman, J.: Powdered Stomach in Treatment of Fatty Liver and Other Manifestations of Infantile Pellagra, *Arch. Int. Med.* 76: 63 (Aug.) 1945.

15. Best, C. H., and Ridout, J. H.: Lipotropic Action of Methionine, *J. Physiol.* 97: 489, 1940.

16. du Vigneaud, V.; Chandler, J. P.; Moyer, A. W., and Keppel, D. M.: Effect of Choline on Ability of Homocystine to Replace Methionine in Diet, *J. Biol. Chem.* 131: 57, 1939. du Vigneaud, V.; Chandler, J. P.; Cohn, M., and Brown, G. B.: The Transfer of the Methyl Group from Methionine to Choline and Creatine, *ibid.* 134: 787, 1940.

17. Selye, M.: *General Adaptation Syndrome and Diseases of Adaptation*, *J. Clin. Endocrinol.* 6: 117, 1946.

18. Duncan, G. G.: *Diseases of Metabolism: Detailed Methods of Diagnosis and Treatment*, ed. 2, W. B. Saunders Company, 1947, p. 504.

When this compromise is reached, there still remain some symptoms of general dehydration. Chronic hypoproteinosis in children and in adults is revealed by dryness and scaliness of the skin, lack of tissue turgescence, cold extremities, increased viscosity of the blood and a tendency to low blood pressure rather than to edema and hypoproteinemia, which is a manifestation of acute hypoproteinosis such as may appear in circumstances of war as it was observed in Mexico in 1915 during the revolution.

The most probable factor in reaching this compromise is the function of the corticoadrenal gland of regulating water and sodium balance at a lower level.

This is usually reached at 6 years of age, when the child is said to be adapted to hypoproteinosis; the morbidity and mortality drop, except for some infections, such as rheumatic fever and tuberculosis, which still are a menace to him.

One then speaks of natural selection, but this does not exactly mean that those who survive are the stronger; it may mean a survival of those persons of lower food requirements.

The Indian will then survive and escape from hyper-tension, obesity, diabetes and coronary thrombosis in a despondent and hopeless life.

Special Article

CANCER OF THE BONE AND JOINT

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Chicago

This article is the tenth of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment. When complete, the series will be published in book form by the W. B. Saunders Company under the sponsorship of the American Medical Association and the American Cancer Society.

The bones and joints are skeletal structures derived from the mesoderm, and cancers arising from them belong to the general class of malignant tumors designated as sarcomas. However, when the cancer is composed of a specific tissue or cell of the skeletal structure the name of that tissue or cell may comprise a part of the name of the tumor. Primary cancer of the bone differs so widely from primary cancer of the joint that the two lesions call for separate consideration.

CANCER OF THE BONE

Sarcoma of the Bone.—Sarcoma arises more frequently in the bone than in any other tissue or system of the body, and the frequency with which it is responsible for loss of limb or life makes it rank as the major problem of malignant tumors springing from the meso-elastic tissues. However, the relative incidence of sarcoma of the bone is extremely low in comparison with that of other disease, and the infrequency with which it is seen by the general practitioner makes for difficulty and much delay in diagnosis.

The etiologic basis of sarcoma of the bone is as obscure as that of malignant tumors in general, and little progress is being made toward a better under-

standing. This is in contrast with the significant modern advances that have been made in the pathology, diagnosis and treatment of the disease. While there is some variation with age according to class, sarcomas of the bone as a group occur principally during the first half of the life span and reach the high point of frequency between the fifteenth and twentieth years, according to the statistics of Christensen¹; the incidence declines gradually until only a rare case is encountered in the seventh or eighth decade. By way of contrast metastatic carcinoma is the common tumor encountered in bone during the second half of the life span, and its relative frequency increases with advancing age.

Males are somewhat more frequently affected than females. According to Christensen¹ the difference in frequency is limited mainly to the group of osteogenic sarcomas.

Little is known about heredity in sarcoma of the bone, but so far it has not been shown to play an important role. Sarcoma is seldom a part of the clinical picture in cancer families.

Certain benign tumors of bone, namely chondroma, cartilaginous exostosis and benign giant cell tumor, are predisposed to transformation into sarcoma.

Paget's disease of bone, osteitis deformans, sometimes leads to the development of sarcoma in one or more of the affected bones. Of 180 primary sarcomas of bone observed by Platt² 10 developed in patients with osteitis deformans.

Fibrocystic disease and osteodystrophia fibrosa are rarely complicated by sarcoma, and radical forms of treatment for the avoidance of malignant transformation are unwarranted.

The exciting cause of sarcoma of the bone remains unknown for the vast majority of cases. Trauma has long been considered an exciting cause and is still the subject of debate. Since sarcoma has often been noted following a single trauma the problem has been to determine whether the injury was the cause of the tumor or whether it precipitated symptoms and signs in a preexisting tumor. Careful studies including roentgenograms have revealed little evidence in support of the view that either single or multiple trauma is the exciting cause of sarcoma of the bone. Among the enormous number of fractures observed annually in which early roentgenograms reveal no change in the bone except the fracture, it is exceedingly rare to observe sarcoma of the bone as a sequel. Coley³ com-

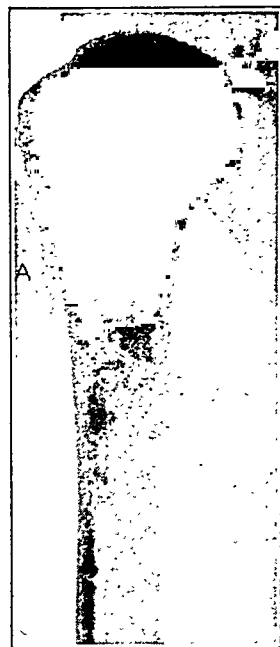


Fig. 1 (case 1).—Central sclerosing osteogenic sarcoma with radiating ossification (A) in tumor along surface of shaft of right humerus.

1. Christensen, F. C.: Bone Tumors: Analysis of One Thousand Cases with Special Reference to Location, Age and Sex, *Ann. Surg.* 81: 1074, 1925.

2. Platt, H.: Sarcoma in Abnormal Bones, *Brit. J. Surg.* 34: 232, 1947.

3. Coley, B. L.: Trauma in Malignant Tumors of Bone, *Am. J. Surg.* 73: 300, 1947.

mented on the fact that in courts of law the importance of trauma in the causation of sarcoma of the bone has been greatly overestimated.

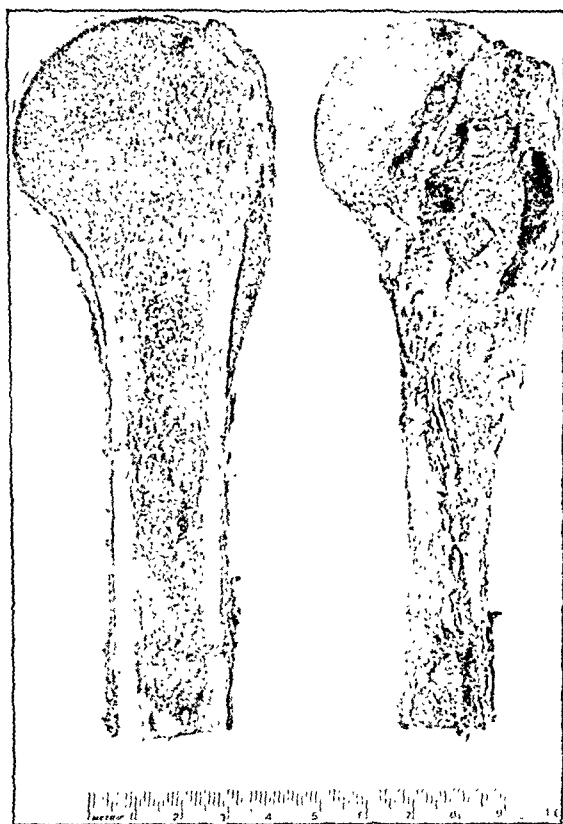


Fig. 2 (case 1).—Posterior view of resected specimen: the central portion of the tumor is ossified, the peripheral portion is little ossified.



Fig. 3 (case 1).—Photomicrographs of sections from peripheral tumor showing (A) radiating ossified tumor and (B) unossified tumor; slightly reduced from magnification of $\times 125$ and $\times 800$, respectively.

The only definitely established exciting causes of sarcoma of the bone in man are roentgen radiation and radioactive elements. Hatcher⁴ recently collected from the literature 17 cases of sarcoma of the bone produced by roentgen radiation and added 3 of his own. Martland⁵ reported cases of sarcoma developing in radiation-damaged bones of dial painters, who repeatedly ingest minute amounts of radium, mesothorium and radiothorium, and demonstrated radioactivity in all the bones. Radiation from roentgen rays, natural and artificial radioactive substances⁶ and certain nonradioactive chemicals⁷ implanted in the bones have all produced sarcoma in experimental animals. Sarcoma of the bone promises to become an important health problem with the future development of atomic energy.

Distribution.—While any part of the skeleton may be involved, primary cancer is disproportionately more frequent in the bones preformed in cartilage than in those preformed in membrane. In general the larger the bone the greater the incidence, which means that the long bones of the limbs and the pelvis are the most frequent seats of neoplastic growth. The tumor nearly always begins in the shaft, and the ends of the shaft are much more frequently involved than is the midportion. Spread of the tumor to the epiphysis is common, but it takes place less readily in children than in adults because the epiphyseal cartilage plate acts as a barrier.

Varieties.—Primary cancers of bone vary greatly in structure, and no classification yet proposed has met with general acceptance. The stem cells of a bone may potentially give rise to malignant growths representative of each type of fixed cell or tissue that enters into its structure, excepting nervous tissue, which comes from without. Consequently classifications, as that of the Registry of Bone Sarcoma of the American College of Surgeons reported by Ewing, are usually based on a combination of cell and tissue types.

An analysis of the registry cases in 1939 revealed 1,437 primary bone cancers classified as follows: osteogenic sarcoma 895, or 62.3 per cent (6 parosteal); chondrosarcoma 110, or 7.6 per cent; periosteal fibrosarcoma 29, or 2 per cent; Ewing's sarcoma 238, or 16.5 per cent; myeloma 112, or 7.7 per cent; reticulum cell sarcoma 10, or 0.7 per cent; lymphosarcoma 19, or 1.3 per cent; malignant giant cell tumor 19, or 1.3 per cent.



Fig. 4 (case 1).—Eleven years after resection and bone transplantation; there is no recurrence but old ununited fracture of graft.

4. Hatcher, C. H.: The Development of Sarcoma in Bone Subjected to Roentgen or Radium Irradiation, *J. Bone & Joint Surg.* 27: 179, 1945.

5. Martland, H. S.: A General Review of Data Gathered in the Study of the Radium Dial Painters with Special Reference to the Occurrence of Osteogenic Sarcoma and the Interrelationship of Certain Blood Diseases, *Am. J. Cancer* 15: 2435, 1931.

6. Brues, A. M.; Lisco, H., and Finkel, M. P.: Carcinogenic Action of Some Substances Which May Be a Problem in Certain Future Industries, *Cancer Research* 7: 48, 1947.

7. Franzen, C. C.; Aub, J. C., and Simpson, C. S.: The Experimental Production of Fibrosarcoma of Bone, *Cancer Research* 1: 393, 1941.

per cent, and liposarcoma 5, or 0.3 per cent. This gives osteogenic sarcoma too high a percentage because of the inclusion of certain other tumors, as central fibrosarcoma, in that class.

By the designation of each variety according to the principal tissue or cell of which it is composed, the great majority of primary sarcomas of the bone may be fitted into the following classification, leaving a relatively small number of undifferentiated tumors unclassified: 1, osteogenic sarcoma; 2, chondrosarcoma; 3, fibrosarcoma; 4, malignant giant cell tumor or giant cell sarcoma; 5, Ewing's sarcoma (so-called endothelial myeloma); 6, reticulum cell sarcoma; 7, lymphosarcoma; 8, angiosarcoma; 9, liposarcoma, and 10, myeloma.

Osteogenic Sarcoma.—Osteogenic sarcoma is composed of cells which possess the property of producing bone. It is the most important of the bone sarcomas, since it comprises about one half of all cases and has a high mortality rate.

The tumor nearly always starts within the bone, replacing the medullary tissue and invading and eroding the cancellous bone. The cells form tumor bone which varies greatly in amount and in degree of differentiation. In some cases the bone is scanty; in others, abundant and dense; in some cases it is little differentiated,

in others it consists of well formed trabeculae. As growth continues the cortex is eroded and penetrated, and the sarcoma forms a mass on the surface of the bone. The periosteum may lay down new bone on the shaft beyond the limits of the tumor. In some cases the tumor outside of the bone ossifies to about the same extent



Fig. 5.—Partially ossified pulmonary metastases (A) from densely ossified osteogenic sarcoma of tibia.

and in the same manner as that within the bone. However, in other cases it ossifies much less extensively and the new tumor bone radiates outward from the cortex into the unossified portion. Cartilage sometimes forms in the process of ossification of peripheral osteogenic sarcoma just as in the process of ossification of peripheral callus. Osteogenic sarcomas cast characteristic shadows of bony density in roentgenograms. Some of the features are illustrated in case 1.

CASE 1.—A dentist, aged 26, for four months had had pain and toward the end of that period a slight swelling in the region of the upper shaft of the right humerus. A roentgenogram (fig. 1) revealed a pronounced increase in density within the head and upper shaft of the humerus, and rays of increased density extended laterally from the cortex into the external tumor (A). Osteogenic sarcoma was diagnosed. The deltoid muscle and the upper 15 cm. of the humerus and its muscular and capsular attachments were resected, and the defect was repaired with transplanted bone from the tibia. A posterior view of the resected humerus (fig. 2) revealed diffusely ossified tumor within the bone and fleshy tumor along the external surfaces laterally and posteriorly. Microscopic sections from the peripheral portion of the tumor (fig. 3) disclosed radiating tumor bone (A) and overlying unossified sarcoma (B). The patient has since remained well and has continued to do his dental work with the right arm. Figure 4 (eleven years after resection shows the recent roentgenologic appearance.

The external tumor may grow to great dimensions, and regional veins may be invaded even while the tumor is small. Metastases usually develop relatively early, but they may not grow to a size by which they can

be recognized for one or more years. The tumor spreads not only by way of the blood stream to the lungs, bones and other tissues but also not infrequently by way of the lymphatics to the regional lymph nodes. The metastases usually ossify if the primary tumor is decidedly ossified. Figure 5 illustrates the roentgenologic appearance of the lungs in such a case.

Chondrosarcoma.—Chondrosarcoma of bone consists, in the greater part or all of its extent, of cartilage showing varying signs of differentiation and other signs of cancerous growth. Clinically it simulates osteogenic sarcoma in many respects but usually runs a more chronic course and frequently casts characteristic shadows in roentgenograms. A soft cartilaginous tumor begins centrally and erodes cancellous bone and inner portions of cortex. There may be little or no surrounding formation of new bone, so that roentgenologically the lesion resembles other osteolytic tumors, bone cysts and granulomas. However, if the thicker portion of the shaft becomes involved both periosteal and endosteal new bone are laid down to form a thick expanded shell

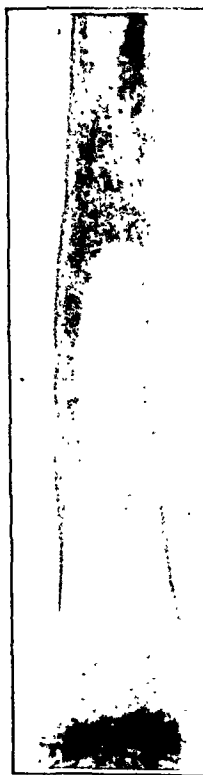


Fig. 6 (case 2).—Central chondrosarcoma with thickening of surrounding bone.



Fig. 7 (case 2).—Photomicrograph of slightly differentiated chondrosarcoma (A); eroding cortex (B). Somewhat reduced from a magnification of $\times 125$.

about the central soft tumor. Roentgenologically this casts a thick, dense shadow surrounding

central radiolucent area which is highly suggestive of a chondrosarcoma, as in the following report of a case:

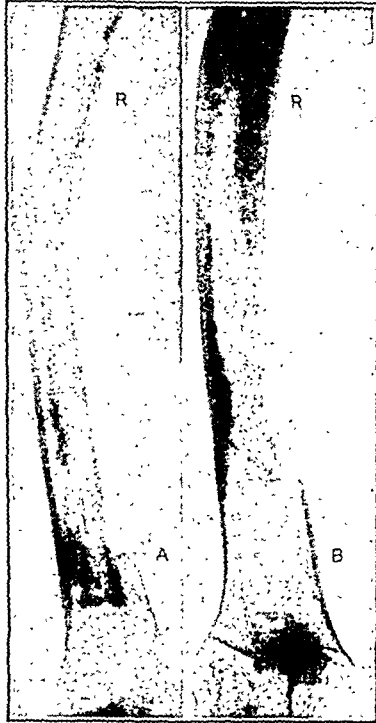


Fig. 8 (case 2).—Bone graft reconstruction after ten and one-half months (A) and seven years (B).

CASE 2.—A girl aged 11 had undergone an operation for painful central cartilaginous lesion of the lower part of the right femur sixteen months before admission; there was recurrence of pain four months ago. Figure 6 shows the roentgenographic appearance. Fifteen centimeters of the shaft were resected, and the defect was repaired by two tibial bone grafts. An embryonal type of cartilage filled the central cavity and eroded the bony wall (fig. 7). The diagnosis was chondrosarcoma of low grade malignancy. The girl has remained well for seven and one-fourth years, and figure 8 portrays the femoral repair after ten and one-half months (A) and seven years (B).

Other cases of central tumor may reach large size, and blotchy islands of calcification and ossification may appear within the cartilage. They cast characteristic blotchy, dense shadows (fig. 9). Even more characteristic are the disconnected, irregular, dense shadows seen in roentgenograms of peripherally situated chondrosarcomas which contain islands of calcification and ossification.

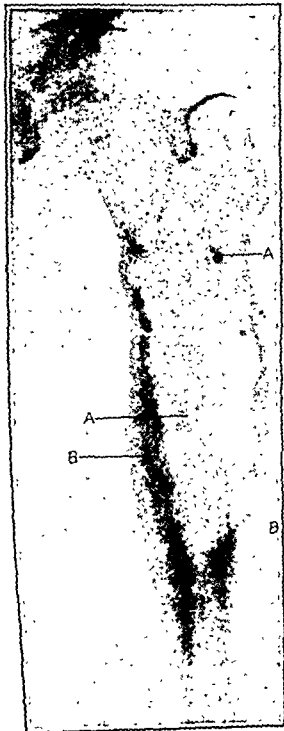


Fig. 9.—Advanced central chondrosarcoma with blotchy ossification within (A) and thick shell surrounding new bone (B).

CASE 3.—A boy aged 14 had a chondrosarcoma of the tibia (fig. 10 A). Amputation of the thigh was performed, and tumor (B) was found to have grown into the femoral vein.

This is not uncommon in the advanced stages of chondrosarcoma, and cartilaginous pulmonary and lymph node metastases may develop.

Fibrosarcoma.—Fibrous tissue is a constituent of the marrow as well as of the periosteum; fibrosarcoma of bone may begin in either structure. Contrary to previously held views, fibrosarcoma is much more frequently primary in the medullary region than in the

periosteum. In the extremities it usually begins in the cancellous portion of the end of the shaft and gradually destroys and replaces both medullary and cortical structures. The tumor tissue never forms tumor bone. After perforation of the cortex an oval mass forms along one side of the bone, and the adjacent periosteum may lay down small amounts of new bone. Pathologic fracture is not uncommon at this stage.

Microscopically the tumor usually consists of spindle cells and a more limited number of round cells with collagen fibers in the matrix and nuclear evidences of cancer. Necrosis is common. Roentgenograms usually reveal extensive reduction in density in the central region and irregularly reduced density of portions of the cortex. There is no shadow of new bone within the tumor, but there may be shadows of periosteal new bone along the surface of the adjacent shaft.

CASE 4.—A woman aged 50 had a painful right knee of one year's duration and a palpable swelling over the back of the lower end of the femur. Figure 11 shows the roentgenologic appearance and figure 12 a large microscopic section of the

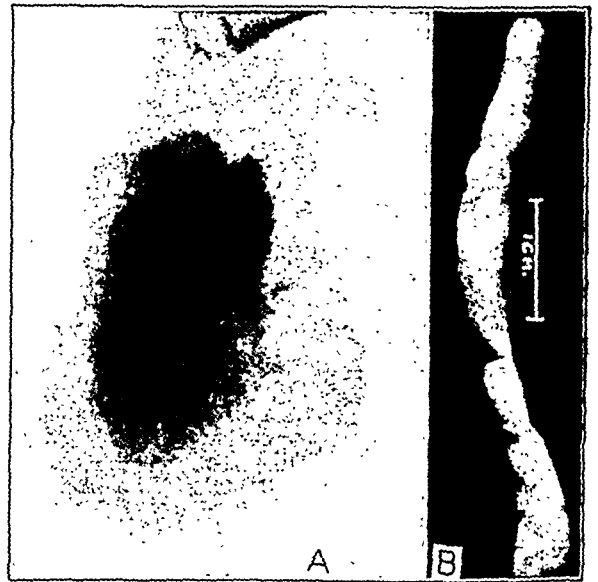


Fig. 10 (case 3).—A, chondrosarcoma of tibia with dense blotchy islands of ossification and calcification in peripheral tumor and B, cartilaginous tumor removed from femoral vein during amputation of thigh.

involved bone which was removed when massive resection of the region was performed. The defect was repaired by two massive tibial bone grafts. The central portion of the tumor was extensively necrotic and the surviving portions consisted of a spindle cell tumor (fig. 13). Twenty-one months have elapsed since the surgical operation, and there are no signs of local recurrence or metastases.

Spindle cell fibrosarcoma of varying grades of malignancy may arise in the periosteum and produce an oval swelling with little tendency to invade the underlying bone. Ewing⁹ emphasized the remarkable tendency for some of these tumors to produce multiple metastases in the periosteum of other bones.

Fibrosarcoma usually pursues a clinical course somewhat less malignant than that of osteogenic sarcoma. But in most cases metastases, often not detectable clinically, are present before treatment is initiated and the disease ends fatally months or years later.

9. Ewing, J.: A Review of the Classification of Bone Tumors, Surg., Gynec. & Obst. 68: 971, 1939; Neoplastic Diseases: A Treatise on Tumors, ed. 4, Philadelphia, W. B. Saunders Company, 1940.

Malignant Giant Cell Tumor or Giant Cell Sarcoma.—Benign giant cell tumor of bone is relatively common, whereas malignant giant cell tumor is rare. The registry in 1939 contained 238 benign giant cell tumors as against the 19 cases that were malignant. Both benign and malignant forms occur most frequently between the ages of 15 and 40 years, and in the limb bones they involve both the end of the shaft and the epiphysis.

Most giant cell tumors that terminate as cancers appear to be initially benign. They produce chronic pain in the region of the joint and later a swelling on one side of the bone. Roentgenograms reveal a sharply circumscribed central area of reduced density beginning usually in the metaphysis and extending into the epiphysis, and there is no shadow of reactionary new bone. Under the diagnosis of a benign tumor the lesion is removed with the curet and often the cavity is filled with bone grafts. Pathologic examination confirms the diagnosis of a benign lesion, but in the course of months or years there is recurrence of pain and tumor and roentgenograms exhibit more ragged destruction of bone. At a subsequent operation the diagnosis of cancer is established.

In a minority of cases the initial tumor grows more rapidly and produces an external swelling with irregular

of the resected femur showed the lateral margin of the soft tumor (A) to be chocolate colored and the central and mesial portions (B) to be a mottled gray. Microscopically the choco-



Fig. 11 (case 4).—Fibrosarcoma destroying bone centrally (A) and breaking through cortex posteriorly (B).

osseous destruction or a triangular layer of new bone in the neighboring periosteum, suggestive of cancer. Pathologic examination after biopsy or curettage establishes the diagnosis of cancer.

Grossly, a benign lesion may be chocolate colored while a malignant one is grayish and mottled. The two types of tissue may be seen in the same specimen when cancer has appeared as a secondary change in a benign tumor. Giant cell sarcoma is nearly always nonossifying. Microscopically it contains giant cells, most of which are of small size, and occasionally a hyperchromatic or dividing nucleus is seen. The mononuclear cells are greatly in excess and in most of the extent of the lesion, and some show hyperchromatic nuclei or various stages of cell division.

In the following case a primary benign giant cell tumor early presented evidence of a low grade cancer.

CASE 5.—A man aged 26 had increasing pain and disability in the left knee for six months and a recent swelling of the mesial condyle. A roentgenogram (fig. 14) showed a sharply outlined reduction in density of the condyle resembling a benign giant cell tumor, but there was a triangular shadow of new bone (C) on the cortex above, an observation more frequently made in cancer. A biopsy confirmed the diagnosis of cancer, after which a massive resection of the region was performed and the defect repaired with two large tibial grafts. A section



Fig. 12 (case 4).—Large microscopic section of resected femur showing tumor with central degeneration.



Fig. 13 (case 4).—Fibrosarcoma, magnification $\times 475$.

late-colored portion (fig. 15), which was composed of giant cells in a stroma containing round and oval mononuclear cells, appeared benign. The mottled gray portion (fig. 16) was composed of comparatively few giant cells and large numbers of spindle cells with oval nuclei. Occasional mitotic figures and numerous hyperchromatic nuclei were present. The patient

lary cavity, grows at varying rates and destroys bone, but its cells never produce bone. On nearing the surface it usually stimulates the periosteum to form considerable bone but the amount may be small, especially in adults. Pathologic fracture is not uncommon in neglected cases. Widespread metastases in bone may destroy so much marrow that severe anemia is produced. Roentgenograms reveal reduction in density from wormeaten destruction of cancellous and cortical bone and a surface layer of increased density from the periosteal new bone. Metastases produce conditions similar to those of the primary tumor.

The tumor responds well to initial roentgen treatment, but there is recurrence in a high percentage of cases and this, with the frequent metastases, produces a fatal termination.

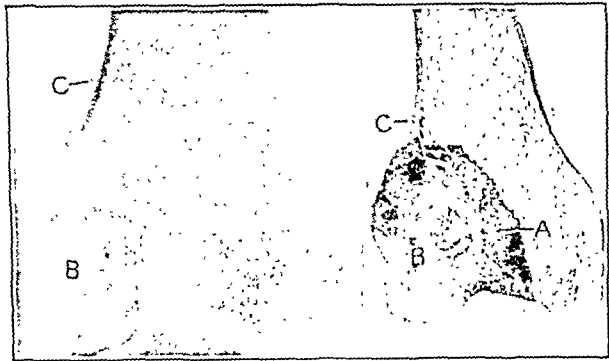


Fig. 14 (case 5).—Roentgenogram and microscopic section of giant cell tumor of the femur: lateral portion benign (A); mesial portion malignant (B); triangle of periosteal bone (C).

has remained well. A roentgenogram (fig. 17) shows the recent appearance of the lesion five and three-fourths years later. The long period of survival raises the question of a borderline tumor, despite the microscopic appearance of cancer.

Ewing's Sarcoma (Round Cell Sarcoma of Uncertain Origin).—Ewing⁹ separated from the poorly differentiated malignant growths of bone a tumor which he



Fig. 16.—Sarcomatous mesial portion (B) of giant cell tumor.



Fig. 15 (case 5).—Benign-appearing tumor, magnification $\times 300$.

thought consisted of angioendothelial cells and which he designated as endothelial myeloid tumor is frequent in children of the bones of the trunk and of the extremities and is prone to metastases in bone. It is an early adult frequently produced in the medul-

Ewing described the tumor as consisting of small polyhedral cells with pale cytoplasm, a small hyperchromatic nucleus and a definite cell border. In some cases tumor cells were thought to line vascular spaces, but other observers have regarded this appearance as due to survival of perivascular cells in degenerating portions of the tumor. Figure 18 shows the usual roentgenologic picture; figure 19 portrays the character of the cells in Ewing's sarcoma. Well preserved cells have an ill defined border, scanty cytoplasm, a relatively large nucleus and scattered chromatin.

Much confusion exists concerning this and kindred tumors of bone marrow, and many authors deny the endothelial origin of any of them. In the opinion of Oberling Ewing's tumor comes from the supporting mesenchymal cells of the bone marrow and is a reticulosarcoma. According to Stout it is a derivative of the mesenchymal supporting framework of the bone marrow a variant of reticulum cell sarcoma. By Lichtenstein and Jaffe it was regarded as a sarcoma derived from primitive marrow connective tissue without further

specification. Willis pointed out that osseous metastases from neuroblastoma arising in the adrenal medulla or in sympathetic nerve ganglions located elsewhere have often been wrongly diagnosed as Ewing's sarcoma. This accounts for a part of the exceedingly high mortality usually given. Further study is necessary before the slightly differentiated malignant growths arising in the medullary cavity can be classified properly.

Reticulum Cell Sarcoma.—Primary reticulum cell sarcoma is a nonossifying, bone-destroying tumor derived from embryonal reticular tissue of the marrow and characterized by an unusually favorable response to surgical treatment.

It affects both long and flat bones and grows to a large size, first within the medullary region and later outside the shaft. The tumor is gray to red, erodes the bone, stimulates the periosteum to form new bone and becomes necrotic in its deeper regions. Grossly and microscopically it bears some resemblance to Ewing's tumor, with which it is often confused.

The tumor consists of round, oval and elongated cells, which are somewhat larger than lymphocytes. The nucleus is relatively large and oval, and nucleoli are sometimes prominent. The stroma contains both collagen and reticulum fibers, and cytoplasmic processes are present.

Metastasis, loss of weight and cachexia appear relatively late, and amputation or wide local resection, in case of trunk bones, gives strikingly good results. Of Parker and Jackson's¹⁰ group of 17 treated principally in this way 7 were free from signs of the disease ten or more years afterward.

CASE 6.—A man aged 23 had a reticulum cell sarcoma (fig. 20). An amputation through the upper part of the thigh was performed one year after the onset. Figure 21 gives the microscopic characteristics of the

Fig. 17 (case 5).—Roentgenogram five and three-fourths years after bone graft repair of defect.

tumor. The patient is now free from signs of tumor thirteen years afterward.

Lymphosarcoma.—In some cases of lymphosarcoma the bones have been the seat of the first lesion to be detected. The tumor is painful and produces central destruction with little or no accompanying new bone. Microscopically the cells consist of malignant lymphocytes in a stroma containing both collagen and reticulum fibers. This has led to an endeavor to establish primary lymphosarcoma of bone as a separate entity. Wieland¹¹ discussed a series of such cases as possible myelomas but preferred to regard them as reticulum cell lymphosarcoma. Craver and Copeland¹² reported several patients with multiple lymphosarcomatous bony lesions who later had extension of the process to the lymph

nodes, thereby completing the clinical and pathologic picture of a reticulum cell lymphosarcoma. In view of the regular appearance of lesions in both the bone marrow and the lymph nodes and the frequent multiple osseous foci, it appears advisable to classify all lymphosarcoma as a disease of the lymphatic system and not to recognize a variety of primary lymphosarcoma of bone which gives rise to metastases in the lymph nodes.

Angiosarcoma.—If Ewing's tumor is excluded because of its nonendothelial nature, angiosarcoma (telangiectatic sarcoma or malignant bone aneurysm) is left as the only sarcoma of the bone which is of vascular origin. It is a rare tumor which is most frequent in childhood and adolescence; it begins in the medullary cavity, grows rapidly, erodes the bone (which is replaced by large blood sinuses) and elevates the periosteum, often creating thereby a blood-filled sac lined by tumor. The peripheral portion consists of reddish tissue which microscopically is composed of hyperchromatic

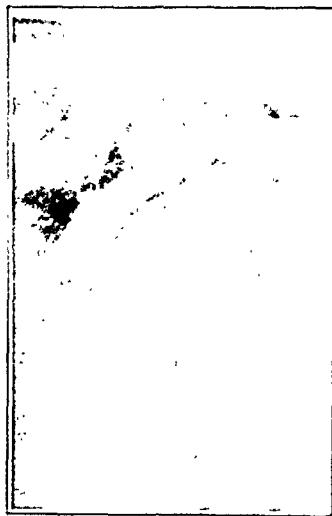


Fig. 18 (case 8).—Ewing sarcoma producing metaphyseal bone destruction and periosteal new bone.



Fig. 19.—Ewing sarcoma, magnification $\times 1,135$.

spindle and polyhedral cells, with numerous small blood sinuses scattered throughout and lined by tumor cells. The tumor reaches large size, frequently causes fracture, metastasizes to the lungs and produces death in the course of several months.

10. Parker, F., Jr., and Jackson, H., Jr.: Primary Reticulum Cell Sarcoma of Bone, *Surg., Gynec. & Obst.* 68: 45, 1939.

11. Wieland, E.: Studien ueber das Primar Multiple Auftrende Lymphosarkom der Knochen, *Virchows Arch. f. path. Anat.* 166: 103, 1901.

12. Craver, L. F., and Copeland, M. M.: Lymphosarcoma in Bone, *Arch. Surg.* 28: 809 (May) 1934.

Liposarcoma.—Only a few cases of liposarcoma have been described as arising from the fat tissue of the bone marrow. Stewart¹³ and Rejbock and Hauser have reported bone-destroying tumors with malignant characteristics which give rise to metastases in the lungs and in other bones. Microscopically their structure resem-

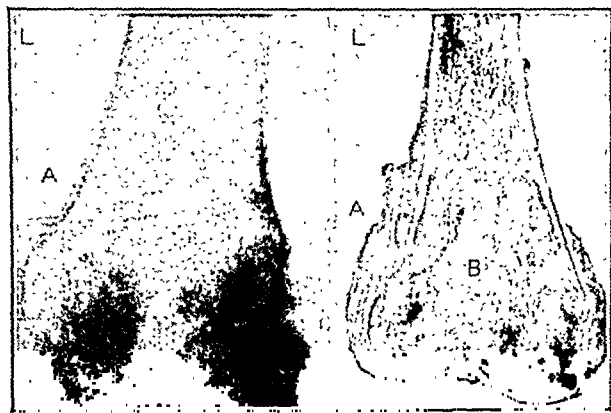


Fig. 20 (case 6).—Reticulum cell sarcoma with extracortical extension mesially (A) and mottled central necrosis (B).

bles liposarcoma in other locations. Additional cases have been reported recently by Khanolkar¹⁴ and Williford and Fatherree.¹⁵

Myeloma.—Myeloma is a malignant tumor of hemopoietic elements of the bone marrow, usually appearing multifocal in origin. It is seen principally in adult life to be beyond the age of 30, and men are about twice as frequently affected as are women. The lesions first to cause pain are most frequently located in vertebrae, ribs, pelvis, femur and humerus. They produce small to large punched areas of osseous destruction which gradually become confluent. Little or no new bone is formed. There is loss of weight, anemia and general debility as the disease advances; fractures may occur, leading to deformities.

The tissue of the tumor is soft and grayish to brown according to vascularity. The main varieties in order of frequency are plasma cell myeloma, myelocytoma, lymphocytoma and erythroblastoma. Bence-Jones albumosuria and hyperproteinemia are present in the majority of the patients. Roentgenograms which exhibit the multiple punched areas of reduced density are of diagnostic importance, as illustrated in a case of plasma cell myeloma in a man aged 40 (figs. 22 and 23). Sternal puncture usually yields myeloma cells, or a biopsy may be necessary in order to confirm the diagnosis.

Solitary myeloma usually becomes multiple, but it may persist as such for long periods or be controlled indefinitely by roentgen therapy without the appearance of other lesions. Roentgen therapy should also be used in multiple myeloma, as it relieves pain and prolongs life.

Diagnosis.—The diagnosis of sarcoma of the bone is generally based on a history of chronic recurrent pain and, sooner or later, the appearance of a deep seated bony swelling. Since in the extremities it is usually near a joint the condition is most frequently mistaken for rheumatism. Roentgenograms taken during this stage reveal changes which are either highly

suggestive or diagnostic of sarcoma. However, before either surgical or radiation therapy is started the diagnosis should be confirmed by biopsy.

Osteogenic sarcoma casts amorphous shadows of increased density in the medullary region, in which it has invaded and replaced old bone. More or less radiating shadows of bony density are cast along the surface of the shaft if the sarcoma has broken through the bone.

Chondrosarcoma may frequently be recognized by the presence of blotchy shadows of increased density or a thick cortical shadow of increased density surrounding a central zone of reduced density.

Medullary fibrosarcoma produces an irregularly outlined central shadow of reduced density and, if it has broken through the cortex, a peripheral shadow of faint density. There is relatively little periosteal new bone casting dense shadows along the surface.

Malignant giant cell tumor usually progresses more rapidly and produces more pain than the benign form, and in roentgenograms the bony margin may show ragged reduction in density resembling fibrosarcoma and osteolytic metastatic carcinoma.

Ewing's sarcoma, with its irregular reduction in density of old bone and varying amounts of increased density peripherally from periosteal new bone, may simulate chronic inflammation and metastatic tumors as well as other forms of sarcoma of the bone. Onset in early life and early metastases are points suggestive of Ewing's sarcoma. Lamellated periosteal shadows are sometimes present but not characteristic.

Reticulum cell sarcoma produces local changes similar to Ewing's sarcoma but occurs in a somewhat older age group, runs a slower course and is much more favorably controlled by surgical procedures.

Angiosarcoma infiltrates and destroys bone, producing roentgen ray shadows of reduced density. It metastasizes

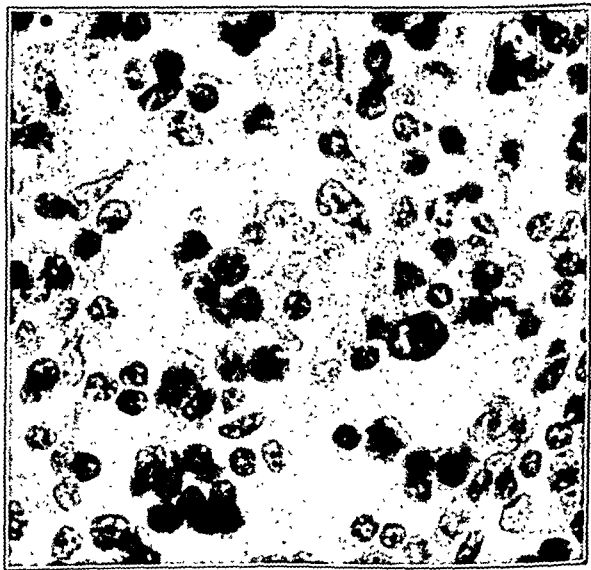


Fig. 21 (case 6).—Reticulum cell sarcoma, magnification $\times 940$.

sizes early and runs a rapidly fatal course, but a biopsy is necessary to make the diagnosis.

Multiple myeloma is usually first suspected from multiple punched out areas of reduced density observed in roentgenograms which were made because of pains in the bones in the absence of tumor. They simulate the picture of osteolytic metastases produced by carci-

13. Stewart, F. W.: Primary Lymphosarcoma of Bone, *Am. J. Path.* 7: 87, 1931.

14. Khanolkar, V. R.: Liposarcoma of Bone, *Indian Physician* 4: 19, 1945.

15. Williford, H. B., and Fatherree, T. J.: Primary Sarcoma of Bone: Report of Case, *U. S. Nav. M. Bull.* 46: 1750, 1946.

noma, especially from the breast. The diagnosis is usually confirmed by the observation of Bence-Jones albuminuria and hypoproteinemia, which are seldom present in solitary myeloma.

In the final analysis there are some cases in which the diagnosis remains uncertain and others in which



Fig. 22.—Humeral and scapular lesions (A) in multiple plasma cell myeloma.

one must be contented with the diagnosis of cancer without knowledge of the exact variety. *Treatment.*—The treatment of a sarcoma of the bone, in the absence of demonstrable metastases, should be by wide resection or excision of the involved bone, if it is located in the trunk or head and lends itself to such an operation. If located in an extremity the treatment should usually be by amputation at a level well above the upper limits of the tumor.

If the sarcoma of a long bone is located in the lower one third, amputation should be either through or above the upper one third; and if in the upper one third the amputation should be above the proximal joint or sometimes through it, as in case of the hip. Excision of the regional axillary or inguinal lymph nodes is an additional safeguard, not extensively practiced at present. Supplementary radiation therapy, both local and regional, is more frequently used.

The average mortality for all varieties of sarcoma of the bone that have been treated along these lines is high. Metastases frequently develop and local recurrence is not rare. Long term statistics of a large series of well studied cases are sadly lacking, but less complete information indicates that the five year survivals are under 15 per cent and that a fair percentage of these are permanently cured. The mortality for angiosarcoma, osteogenic sarcoma and Ewing's sarcoma is notably high, while that of chondrosarcoma and reticulum sarcoma is definitely less so.

Irradiation is the treatment of choice in case of sarcoma of the bone which is so located that surgical treatment cannot be employed or which has produced demonstrable distant metastases. Ewing's sarcoma, lymphosarcoma, reticulum cell sarcoma and metastatic cancer usually respond favorably to treatment but sooner or later recur and become radioresistant. Embryonal chondrosarcoma also responds favorably and may be held in check for prolonged periods. Osteogenic sarcoma responds extremely poorly, and it is rare to see a case in which prolonged palliation is obtained.

A selected group of sarcomas of the long bones of the lower grades of cancer and relatively small size may be treated by extensive resection of the involved bone and adjacent soft tissues and repair of the skeletal defect by massive transplantation of bone. Experience has shown, as in the 3 cases shown in figures 1 to 4, 6 to 8

and 14 to 17, that a useful extremity may thereby be preserved. The incidence of local recurrence is only slightly to moderately increased over that which follows amputation, and the incidence of distant metastases is only increased to the extent that they may spread from a possible local recurrence. From my limited experience the most favorable types for such treatment are chondrosarcoma, giant cell sarcoma and reticulum cell sarcoma (1 patient who had reticulum cell sarcoma remains well seven and one-third years after resection of 17 cm. of the shaft of the femur, with subsequent reconstruction by transplantations of bone). Blood transfusion, tourniquet hemostasis and antibiotics have rendered these, as well as other extensive operative procedures more feasible. One of the most important future advances in the surgical treatment of sarcoma of the bone should come from the judicious employment and expansion of local resection.

CANCER OF THE JOINT

Primary cancers of the joint are rare, there being fewer than 150 cases in the literature. They have been variously designated as synovioma, synovial sarcoma and cancerous synovial tumor. Giant cell and xanthomatous tumors of joints almost never undergo malignant change.

Synovial sarcomas occur especially in young adults and seldom after the age of 40 years. Haagensen and Stout¹⁶ found that there are 3 men affected to every 2 women. A relatively large number of cases were encountered among the Armed Forces during the late war, as reported by Bennett.¹⁷ The region of the knee is the seat of the tumor in nearly half the cases, the ankle, hip, tarsus and elbow being the other frequent locations.

The lesion begins in or about some portion of the synovial tissue as a painful swelling and may progress slowly over a period of years before either the presence of a tumor or the severity of the pain causes the patient to seek medical aid. The swelling is either confined to the region of the joint or extends distally or proximally in the adjacent soft tissues. Occasionally it invades and erodes the bone. Because of the pain, operative intervention is frequently performed while the tumor is small. It is found to be grayish or bluish

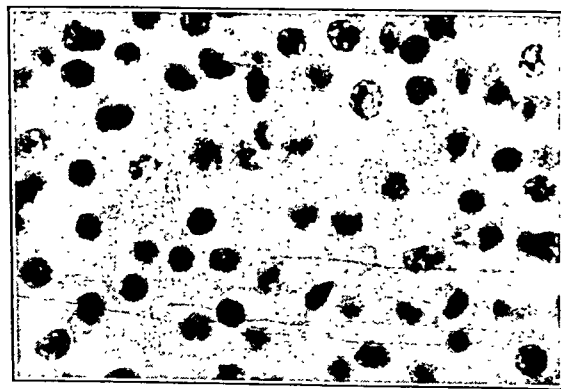


Fig. 23.—Plasma cell tumor in multiple myeloma (same case as figure 22).

and may adhere to surrounding tendons, muscles or bone. Microscopically it consists of a variety of cells which are variously arranged. This is because the

16. Haagensen, C. D., and Stout, A. P.: Synovial Sarcoma, *Ann. Surg.* 120: 826, 1944.

17. Bennett, G. A.: Malignant Neoplasms Originating in Synovial Tissues, *J. Bone & Joint Surg.* 29: 259, 1947.

synovial lining originates from the same mesenchymal tissue which produces the capsule and articular cartilage. Most of the cells are spindle shaped and arranged in sheets. Epithelial-like cells frequently form alveoli in a stroma of spindle cells. Synovial membrane patterns, bone and cartilage are sometimes present. Mytotic figures are inconspicuous except in the late stages.

After local excision the tumor frequently recurs, progresses rapidly and gives rise to metastases. Roentgenograms of the joint seldom reveal changes of bone or joint, but bone formed in the tumor may cause blotchy, dense shadows. The performance of biopsy is of great importance in the establishment of the diagnosis. Despite the slow course of the disease, the prognosis is extremely unfavorable. Of 104 patients whose cases were reviewed by Haagensen and Stout, only 3 were alive and free from metastases five years after the start of treatment.

Very wide excision is the treatment of choice when the disease is recognized in the early stage. This may involve sacrifice of tendon, muscle, capsule and even bone with ankylosis of the joint. Amputation is the treatment in the later stages.

Clinical Notes, Suggestions and New Instruments

MEDIASITINIS DUE TO INGESTION OF GLASS

JOHN D. STEELE, M.D.
Milwaukee

Considering that the glass industry produced over seven billion glass food containers during the year 1946,¹ it is surprising that accidents due to the ingestion of pieces of glass broken off these containers have rarely been reported.

I am reporting the cases of 2 small children, in each of whom mediastinitis developed after ingestion of glass chipped off baby food containers. These accidents occurred within a three week period. In both instances it is probable that the breakage of the containers was due to the improper exertion of force at one particular point in prying the covers off the vacuum-packed glass containers. However, it is probably not generally realized by the consumer that such force should be exerted at more than one point about the rim of the container and that directions for opening such containers, even though printed in extremely small type, could well be followed if similar accidents are to be avoided. Careful inspection by mothers of the rims of such containers after opening should be a routine procedure.

The importance of the early recognition of the complications of such accidents by physicians is obvious. Particular attention should be paid to the discovery of residual defects in baby food containers in cases in which the ingestion of a foreign body is suspected.

REPORT OF CASES

CASE 1.—History.—D. D., aged 18 months, was admitted to Milwaukee Children's Hospital on Dec. 21, 1946, at 5 p. m., with the following history: On the previous day, at 4:30 p. m., the child's mother had pried the metal lid off a glass container of baby food, using the back of a knife. After eating the contents of the jar, the child cried and gagged, and blood was noticed coming from the mouth. At 9 p. m. on the same day, it was noted that the child had a fever. It was then discovered that a piece of glass had been chipped off the rim of the glass container which had contained the baby food.

Physical Examination.—The child appeared toxic. He evidently had pain when attempts were made to move his head. Temperature was 102.4 F.

Roentgenologic Examination.—Lateral and oblique views of the neck revealed a radio-opaque foreign body in the region of the esophageal orifice. The retroesophageal space in the neck and mediastinum was definitely widened and contained gas.

Hospital Course.—One and one-half hours after admission, anesthesia was induced with ether and the pharynx and esophagus were explored with a direct laryngoscope and an esophagoscope. No foreign body was found. A shallow laceration was noted in the right anterior tonsillar pillar and a deeper laceration in the left pyriform fossa. It was concluded that the foreign body had perforated through the latter. A cervical mediastinotomy was then performed on the left. Definite, thin pus was encountered posterior to the esophagus. A Penrose sheath was inserted into the mediastinum for drainage. A cursory search of the retroesophageal space failed to reveal the foreign body. Because of the relatively poor condition of the child, an extensive search was not made at this time.

Subsequent culture of the pus revealed hemolytic staphylococci, nonhemolytic streptococci and a long aerobic gram-negative bacillus.

The child's postoperative course was stormy, being complicated by a thrombophlebitis of the left leg which followed the administration of intravenous fluids. Since the child was able to swallow fluids only with difficulty, feedings were administered by gavage until the sixth postoperative day, when formula appeared on the dressings on the neck. Fluids were then administered intravenously, and later there was oral administration of a mixture of "amigen" and glucose. Temperature returned to normal on the fourteenth postoperative day.

The patient received 400,000 units of penicillin, intramuscularly, per day from the day of admission until the eleventh postoperative day and 0.5 Gm. of streptomycin, intramuscularly, per day from the sixth to the eleventh postoperative day.

Roentgenologic examination of the tissues of the neck on December 30 revealed the foreign body posterior to the larynx at the level of the fourth cervical vertebra. On Jan. 3, 1947, the thirteenth postoperative day, under fluoroscopic control, a forceps was inserted through the wound in the neck and the foreign body grasped and withdrawn from the retroesophageal space. The foreign body proved to be a piece of glass having extremely sharp ends and edges, measuring 13 mm. in length and 6 mm. in width. This fragment exactly fitted the defect in the baby food container (see figure).

The patency of the fistula from the pharynx to the retroesophageal space was followed by the administration of dye by mouth and its appearance on the dressings. Since no dye appeared on the eighteenth postoperative day, normal feedings were resumed. The child was discharged from the hospital on January 11, the twenty-first postoperative day, at which time the wound in the neck was nearly healed. Two days after discharge, after ice cream had been eaten, a small amount of white fluid was noted to come from the wound in the neck. Drainage was noted after liquid feedings for the next week, after which the wound healed solidly.

CASE 2.—History.—R. R., aged 15 months, was admitted to Milwaukee Children's Hospital on Jan. 11, 1947, at 9:30 p. m., with the following history: Two days before, at noon, the child's mother had pried the metal lid off a glass container of baby food, using a "hook" type of opener. After eating part of the food, the child cried and blood was noticed coming from the mouth. Soon afterward the mother noticed that a piece of glass had been chipped off the rim of the glass container. The defect measured 15 mm. in length and 6 mm. in width and was exactly the same shape as the defect in the container in the case of D. D. The following day the child had a temperature of 102 F.

Physical Examination.—The child appeared toxic. Respirations were labored. Mucopurulent secretions were present in the nose and pharynx. Temperature was 103.6 F.

Roentgenologic Examination.—Anteroposterior and lateral views of the neck and thorax revealed a decided widening of

From the Milwaukee Children's Hospital.
1. Personal communication from Glass Container Manufacturers' Institute, Inc., Feb. 18, 1947, based on Department of Commerce statistics.

the retrotracheal and upper mediastinal spaces. The retrotracheal space (in the lateral view) measured 3.4 cm. instead of the normal of about 1 cm. This space contained a considerable amount of gas. There was no definite evidence of a foreign body.

Hospital Course.—Three hours after admission, anesthesia was induced with ether. The pharynx was then explored with a direct laryngoscope, and a definite laceration was noted in the posterior pharyngeal wall about 2 cm. below the uvula. No further endoscopy was performed at this time because of the child's respiratory difficulty, which was of an obstructive type. Just as an incision was to be made for a cervical mediastinotomy, the child's respirations stopped. A 4 mm. bronchoscope was immediately introduced into the trachea, the lumen of which was found to be greatly compressed, the lower portion being narrowed to a slit, the greatest width of which was not over 3 mm. As soon as the bronchoscope was passed through this slit, definite respiratory exchange was noted on manual compression of the thorax. Normal respirations were soon resumed. With the bronchoscope in the trachea, a cervical mediastinotomy was then performed on the left by Dr. Paul Hausmann. When the retroesophageal space was entered, a large amount of foul

SUMMARY

Two cases of mediastinitis in children are reported. Both followed the ingestion of baby food from containers from which glass had been chipped when the containers were opened. One case was proved to be due to the ingestion of the glass fragment, while the other was presumably due to the same type of fragment.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following report. HOWARD A. CARTER, Secretary.

THE CONTINENTALAIR ICELESS OXYGEN TENT WITH AUTOMATIC TEMPERATURE CONTROL ACCEPTABLE

Manufacturer: Continental Hospital Service, Inc., 18636 Detroit Avenue, Cleveland 7.

The Continentalair Iceless Oxygen Tent with Automatic Temperature Control is designed to provide an oxygen-enriched atmosphere for therapeutic purposes. When plugged into an electric outlet and equipped with a tank of compressed oxygen, it delivers a cooled and filtered gaseous mixture into the tent. The mixture may consist of oxygen from the tank plus recirculated air from the tent; the mixture is moved by a fan driven by a motor. There is also a compressor motor which accomplishes the refrigeration. The refrigerant is dichlorodifluoromethane ("freon").

The apparatus was examined in a clinic acceptable to the Council on Physical Medicine.

Hoods.—The material used to make the hoods is left to the discretion of the purchaser. About 80 per cent of hospitals today use transparent chlorinated rubber film made to fit the tent; this material may be disposed of economically. Another type of hood is made of fabric with plastic windows. These materials are fire resistant but in the presence of oxygen are highly inflammable. The hoods display a "no smoking" sign.

Operation.—(a) Circulation of Air: The blower is apparently satisfactory. There is no demonstrable tendency for stagnation of areas of the tent's atmosphere, yet no air currents are perceptible to the patient.

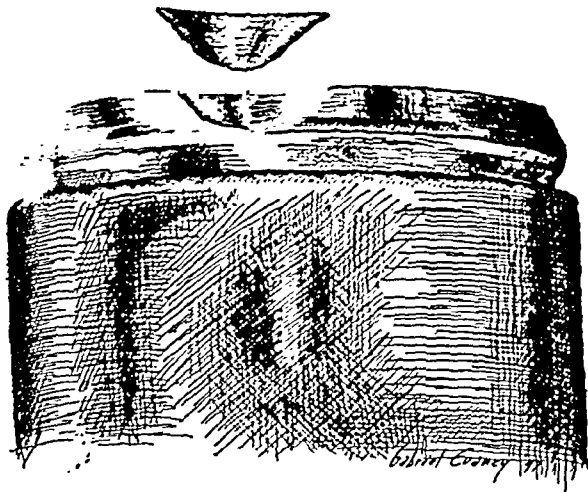
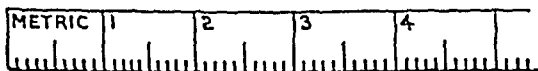
(b) Cooling: The refrigeration unit is efficient and extremely convenient. It is the outstanding feature of this apparatus. The temperature can be reduced easily to suit the comfort of the patient. In a room temperature of 92 F. and with the tent exposed to direct sunlight, the temperature in the tent was reduced to 72 F. in thirty minutes. The temperature in the tent does not correspond to the dial setting (in this instance, 60 F.) under such circumstances, but under more favorable conditions the temperature in the tent is usually within 2 to 5 degrees of the dial setting.

(c) Oxygen Concentrations: The oxygen concentrations were found to be comparable to those of other oxygen therapy tents. The concentrations vary widely, chiefly as the result of air contamination through leaks. Only ordinary precautions were taken to prevent such leaks during these investigations. Oxygen flows of 5 to 8 liters per minute produced oxygen concentrations of 30 to 40 per cent; with an oxygen flow of 15 liters per minute, the maximum concentration observed was 57 per cent.

(d) Carbon Dioxide: No significant accumulation of carbon dioxide within the tent was detected, even when a flow of oxygen was not introduced. Run as an "allergy chamber" without adding oxygen, carbon dioxide did not accumulate above 0.5 per cent and in one test was 0.2 per cent at the end of an hour. In such circumstances concentrations of oxygen varied between 19.3 and 19.6 per cent.

The atmosphere containing oxygen circulates through a sealed chamber, and danger of combustion from sparking of the electrical apparatus should be minimal.

The Council on Physical Medicine voted to include the Continentalair Iceless Oxygen Tent with Automatic Temperature Control in its list of accepted devices.



Drawing of glass baby food container showing piece of glass chipped off rim of container at time of opening. Glass chip ingested by child (case 1) and subsequently removed from retroesophageal space.

pus escaped under pressure. A large Penrose sheath was inserted well down into the mediastinum for drainage. On release of the pus from the mediastinum, the lumen of the trachea was observed to return to normal, the bronchoscope then being withdrawn.

Subsequent culture of the pus revealed staphylococci, streptococci, *Hemophilus influenzae* and a long aerobic gram-negative bacillus.

The child's postoperative course was satisfactory, the temperature returning to normal on the seventh postoperative day.

The patient received 600,000 units of penicillin, intramuscularly, per day from the day of admission to the sixth postoperative day and 0.5 Gm. of streptomycin, intramuscularly, per day from the third to the sixth postoperative day.

Roentgenologic examination of the tissues of the neck, mediastinum and abdomen on January 7 failed to reveal any evidence of an opaque foreign body. It was concluded, therefore, that the piece of glass had passed through the gastrointestinal tract after perforating the pharyngeal wall.

Healing of the wound in the neck was satisfactory and at no time was leakage of food observed on the dressings. The child was discharged from the hospital on January 31, the nineteenth postoperative day.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 21, 1948

SLUDGED BLOOD

In a report representing sixteen years' direct study of the circulating blood, Knisely and associates¹ tell of observations on organs of experimental animals and on the bulbar conjunctivas of healthy and diseased human subjects. Studies of living organs were made in frogs, mice, rabbits, dogs, monkeys and other laboratory animals. Parts of organs were transilluminated by light-conducting fused quartz rods and were studied under the microscope with a magnification of sixteen to six hundred times. Structure, dimensions and behavior of blood and blood vessels were observed. Studies in human subjects were made on unanesthetized bulbar conjunctivas with binocular dissecting microscopes, using oblique illumination of universal slit lamps or ophthalmoscope light.

In healthy animals and human beings Knisely and his co-workers concluded that circulating red blood cells are not agglutinated but tend to repel each other slightly. Rouleau formation does not take place in carefully handled tissues. The normal red blood cells were not coated with any visible protein precipitate. Neither red nor white cells were observed clinging to the walls of small vessels. Inner surfaces of small vessels were smooth and clean. The flow of unagglutinated blood was streamlined, and the cells were arranged in concentric laminae. Pictures of normal blood flow were recorded cinematographically. From animal studies the authors concluded that the rate of flow of blood through each tissue of the body sets the maximum rate at which cells of that tissue can receive oxygen and other blood-borne materials. The small normal vessels of most tissues and organs were not observed to leak any appreciable amounts of fluid. The blood flowed so rapidly in most arterioles and venules ranging from 60 to 120 microns in diameter that the individual red cells could not be seen. The authors considered this a crude but accurate and useful criterion for adequate rates of flow through tissues and capil-

laries. "If the rates of flow of oxygen-saturated arterial blood are fast enough so that individual unagglutinated blood cells cannot be seen in vessels of this size in normal animals and man, high magnifications show that no hemoconcentration is taking place in capillaries (i. e., no blood fluid is being lost through the walls of the tissue capillaries)." In their observations of vessels the authors found that almost every arteriole-to-capillary or sinusoid-to-venule pathway can contract tightly throughout its length, making the inner diameter zero and thus forcibly preventing the entrance of blood. Most capillaries can dilate without losing tonus but not much more than two or two and one-half times the diameter of the animal's own red blood cells.

In the livers of frogs and rhesus monkeys the normal naked red blood cells slide and bump along the surfaces of the highly phagocytic cells which line the hepatic sinusoids but "no normal red cells have ever been observed to be ingested."

Having made the foregoing observations in normal animals and persons, the authors then turned to the examination of conjunctivas of 600 human patients in whom practicing physicians had diagnosed a wide variety of pathologic conditions. In large numbers of patients the diagnoses included many of the common acute and chronic inflammatory diseases of body organs such as the lungs, heart, gastrointestinal tract, thyroid and blood. Patients with tuberculosis, leukemia, hypertension, malaria and many of the infectious diseases such as measles, whooping cough, typhus, tularemia, spirochetal jaundice (Weil's disease), smallpox and typhoid were also seen. Several patients with traumatic injuries were included. In a large number of patients the authors found many arterioles both temporarily and permanently plugged with masses of sludge, represented by agglutinated masses of red blood cells (not rouleaux). Other observers (Odell, Aragon and Pottinger) examined the circulating blood of 31 women with normal, uncomplicated pregnancies and found sludged blood in 12. Of 23 women with various pathologic complications of pregnancy, 22 showed sludged blood.

Not only were agglutinated clumps of red blood cells found in all severely sick persons, but all types of pathologic tissues were seen. Both red and white blood cells were observed sticking to the linings of small vessels. Circulating masses of agglutinated white and red cells were seen to enter and plug small arterioles, which subsequently dilated, bulged, sacculated and leaked fluid into surrounding tissues. Patients in whom the sludging of blood was advanced manifested evident slowing of the circulation, as judged by circulation through the arterioles observed. This occurred in several instances in spite of hypertension. Every severely ill person who was observed had intravascular agglutinated blood and visible pathologic change of the vessel walls.

¹ Knisely, M. H.; Bloch, E. H.; Eliot, T. S., and Warner, Louise: Sludged Blood, *Science* 106:431-440 (Nov. 7) 1947.

In attempting to determine how sludged blood damages the body the authors concluded that: (1) the resistance of sludged blood to its own passage through the bottlenecks of the circulatory system forcibly reduces rates of flow through all the open vessels of the body; (2) agglutinated red cells are ingested and destroyed in the phagocytic cells of the liver and spleen; (3) there is a stalling and sedimenting of the masses of blood cells out of the plasma during life, and (4) various degrees of reduction of circulating blood volume caused by factors (1) and (2) initiate intermittent, prolonged shutting off of the arterioles of selected tissues and organs.

The authors expressed the belief that their observations have clarified many fundamental ideas about disease and have made simpler the solution of certain groups of currently perplexing problems. If it can now be learned how to keep blood fluid and unagglutinated and vessel walls intact with adequate blood volume present, many effects of other pathologic mechanisms can be more clearly determined, unobscured by disease effects resulting from the sludging mechanism.

As a result of publication of this report, many practicing physicians have suggested use of heparin or "dicumarol" to prevent the sludging of blood in patients met in their daily practices. Until these observations have been extensively checked by other investigators, introduction of new methods of treatment to combat sludging of blood should be highly experimental.

THE CONTRIBUTION OF A MEDICAL SCHOOL TO THE HEALTH PROGRAM OF A COMMUNITY

A medical school can make important contributions to the health program of the community in which it is located. The booklet "Bringing Modern Medicine to the People,"¹ outlines the long range program developed by the Long Island College of Medicine for serving better the nearly five million persons who live in Brooklyn and Long Island.

Medical schools are no longer merely centers for undergraduate instruction more or less isolated from their communities. American medical schools are making increasing contact with all phases of medical care. The community looks to its medical schools for leadership in formulating and directing better forms of medical service. Medical schools are accepting this challenge and, within the capacity of their resources, are seeking to place their personnel and facilities at the service of the people of the area in which they are located. In the plan advanced by the Long Island College of Medicine, special emphasis is placed on the promotion of community health through coordination

of the medical school's program with the activities of the other health resources in the Brooklyn-Long Island region. At the hub of the network of facilities for medical education, research and medical care and the community health program planned by the medical school will be the Long Island College of Medicine-Brooklyn Medical Center, comprising the projected new medical school plant, a university hospital and health center and the adjacent city hospitals and related laboratory units.

Today the medical school is an acceptable agency for integration of the medical and health resources in a communitywide cooperative program for the better health of more persons. In achieving this objective the medical schools of this country will require greatly increased financial support. The Long Island College of Medicine has estimated that it must secure \$7,000,000 by 1950 and an additional \$9,000,000 by 1960 to carry out its program. In terms of the benefits that will accrue to the community the amounts are small. The program contemplated, especially when integrated with voluntary prepaid insurance plans, will go much further in providing adequate medical care of high quality than will any alternative scheme thus far proposed, and at much less cost.

THE NEED FOR PLASMA SUBSTITUTES

Since adequate amounts of pooled human plasma were readily available for the treatment of traumatic shock during World War II, research in the development of suitable substitutes was not extensive. Plasma was employed on a large scale; at first hazards were not anticipated with its parenteral administration in contrast to those associated with the various substitutes, such as acacia, pectin, polyvinyl alcohol, methyl cellulose, gelatin and cattle plasma. However, the mounting evidence that infectious hepatitis is transmitted not infrequently by pooled plasma definitely contraindicates any indiscriminate therapeutic use of this agent. The relatively high cost of human plasma, moreover, is a deterrent when large amounts are required for diuretic purposes in the treatment of nephrosis.

Colloidal plasma substitutes have retained a limited position in the medical armamentarium despite the objectionable properties which they display, especially when injected repeatedly in large amounts.¹ The recent report of Mannix² on a fatal case of nephrosis complicated by arabinosis, which was produced by the repeated administration of large amounts of acacia, presents a striking illustration of the dangers connected with the use of such agents. Subsequent to initial satisfactory diuretic responses to acacia, hypersensitivity; loss of erythrocytes, hemoglobin and plasma

1. Bringing Modern Medicine to the People: the Long Island College of Medicine Medical Center Development Fund and Community Health Project, Brooklyn, the Long Island College of Medicine, 1947.

1. Hueper, W. C.: Macromolecular Substances as Pathogenic Agents, Arch. Path. 23: 267, 1942.

2. Mannix, E. P., Jr.: Arabinosis: An Exogenous Macromolecular Storage Disease, Brooklyn Hosp. J. 5: 200 (Oct.) 1947.

proteins; acceleration of erythrocytic sedimentation; absence of a diuretic reaction; evidence of hepatic injury, and hepatomegaly appeared. These symptoms, resulting from the progressive storage and retention of gum acacia in the tissues. These symptoms, reflected in part impaired function of internal organs. At autopsy the liver, spleen and kidney were three to five times normal weight and showed large amounts of acacia in swollen reticuloendothelial cells and histiocytes, which were transformed thereby into foam cells. Similar cells were present in the marrow, lymph nodes, thymus and adrenals, and in atheromatous patches of the aorta. In this case the retention of acacia quite certainly contributed to the fatal outcome.

The contrasting results reported by other investigators in different patients of similar ages, who received acacia in comparable amounts, may be attributable in part to the possible absence of toxic impurities in the preparations that they used. In part the differences may result from variations in the molecular size of the acacia, which is apt to vary with the source and treatment of the gum.

The case is a vivid illustration of the need for an effective, stable, cheap and readily available substitute for human plasma free from the objectionable features of both pooled human plasma and substitutes now in use.

Current Comment

A NEW LOW IN PROMOTION OF TESTOSTERONE

Writers of promotional material constantly seek new and novel means to extend the sales of the products they extol. A new low seems to have been reached in the promotion of a brand of testosterone. A brochure entitled "Male Sex Hormone Therapy in the Male and Female" lifts a partial quotation from an article by Thompson,¹ "failure to show improvement means that the symptoms complained of are not the result of the male climacteric," to suggest that testosterone be administered as a means of diagnosis. If the patient improves following male hormone therapy, he is in the midst of his climacteric—the testosterone goes in and the diagnosis comes out—either he has it, or he hasn't. The fallacy should be obvious. Too often uncritical readers swallow such *post hoc ergo propter hoc* reasoning without appreciating its absurdity. Vague symptoms of anxiety, tiredness and inertia respond often to the administration of a placebo or even to simple suggestion. If an injection of distilled water results in temporary alleviation of such symptoms, shall we conclude that lack of water caused them? Evidently our medical schools must put more stress on scientific judgment and evaluation of evidence.

1. Thompson, W. O.: J. Omaha Mid-West Clin. Soc. 8: 8, 1947.

STILLBIRTHS

In 1934 the number of stillbirths in the United States was 78,503;¹ the number of stillbirths at present² is about 65,500 a year. It appears that the chances of being born alive are best for the second child and decrease progressively for each successive child. The stillbirth ratio among second children in this country, exclusive of Massachusetts, for the period 1940 to 1944 was 18.5 per thousand live births, while the ratio for the first born was 24.4, or about one third greater. Births of the seventh order were twice as likely to be stillborn as were those of the second order, while for the tenth and later born the ratio was three times as great. A second and more important factor in stillbirths, the *Statistical Bulletin of the Metropolitan Life Insurance Company* says, is the age of the mother. The tendency of the stillbirth ratio is to rise with the increasing age of the mother. A child is more likely to be born alive when the mother is in the age group 20 to 24 years. The ratio at ages 30 to 34 is more than 50 per cent greater, more than twice as great at ages 35 to 39, three times as great at ages 40 to 44 and at least four times as great at 45 and over. The stillbirth ratio is relatively high also among mothers who bear a large number of children in rapid succession. Mothers under 20 years of age who bear their fourth child show a considerably higher stillbirth ratio than do mothers in every other age group up to 40 years; the same is true for women who bear their sixth child as early as 20 to 24 years. While the reduction already achieved in the number of stillbirths is a source of satisfaction, much remains to be accomplished in this field of conserving life. The hazard of stillbirth could be further reduced if more mothers received medical care early in their pregnancy; this is particularly important for pregnant women at both extremes of the childbearing period.

CASEIN AND LACTALBUMIN

Osborne and Mendel in their extensive investigations of proteins and amino acids observed that lactalbumin is superior to casein in nutritive value. This conclusion was reached following careful quantitative feeding experiments with albino rats.¹ The increasing use of protein hydrolysates in parenteral feeding in medicine makes important a comparison between these widely used proteins in human nutrition, as casein will probably always be more readily available than lactalbumin. Mueller and Cox² have compared the influence of these two proteins on the nitrogen balance in human subjects under experimental conditions which permitted the calculation of biologic values as well. They concluded that there is little, if any, difference between the nutritive values of casein and lactalbumin under the conditions of their study.

1. Williams, P. F.: The Stillbirth Problem, Am. J. Obst. & Gynec. 34: 940-955 (Dec.) 1937.

2. The Chances of Being Born Alive, Statist. Bull. Metrop. Life Insur. Co. 28: 4 (Nov.) 1947.

1. Osborne, T. B., and Mendel, L. B.: J. Biol. Chem. 20: 351, 1915.
2. Mueller, A. J., and Cox, W. M., Jr.: J. Nutrition 34: 285, 1947.

ORGANIZATION SECTION

THE SAN FRANCISCO MUNICIPAL EMPLOYEES' HEALTH SERVICE SYSTEM

INTRODUCTION

ROBERTSON WARD, M.D.

President, San Francisco County Medical Society

In view of the existing controversy between the proponents and opponents of compulsory health insurance, I believe that a historical review of the situation in San Francisco would be of interest to the readers of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

In my opinion this situation is of more than local interest; in fact, it is fundamental to American medicine.

Like most compulsory systems, the San Francisco Municipal Employees' Health Service System started out by promising too much for too little—in an attempt to stifle opposition to its compulsory payroll deduction features. And like most systems of socialized medicine, when financial difficulties developed it first siphoned off funds needed for medical services to help defray the costs of bureaucratic overhead. When that failed to balance the books, the system increased its rates to insured members—and then took the final step, characteristic of all experiments in socialized medicine, by demanding that physicians lower the quality of medical and hospital care provided their patients.

The San Francisco Municipal Employees' Health Service System has provided a perfect example of socialized medicine for a ten year period—bureaucratic interference with doctors and their patients, dictating to physicians how they shall treat their patients, attempting to foist second class medicine on doctors and patients, domination of laymen in the management—and all the other evils with which medicine is threatened nationally, and which actually happened here in San Francisco!

ADDRESS

ANTHONY B. DIEPENBROCK, M.D.

Retiring President, San Francisco County Medical Society

The fundamental and the fatal deficiency in the set-up of the San Francisco Municipal Employees' Health Service System, and the one which physicians have finally been compelled to reject unequivocally, is that it is a compulsory system, which city employees are forced to join as a condition of their employment.

Its operation as a laboratory experiment in socialized medicine has confirmed that when compulsion is employed to bring physician and patient together, the quality of medicine deteriorates and patient and doctor alike become pawns in the hands of bureaucrats.

It confirms, too, that government-dominated medicine is bad medicine. In the case of the health service system, however, members of the medical profession do not rest their opposition to its continuation as a compulsory system on abstract or ideological theories. Certainly, opposition to socialization of the medical profession is included among the most important objections, but in the case of the health service system a realistic appraisal of its function proves that city employees can only expect treatment as second class patients and that they will continue to be deprived of medical and surgical services for which they are paying, but which the system denies them.

How, it may be asked, did this health service incubus fasten itself on the medical profession and the city of San Francisco? Let me review its history. The San Francisco Health Service System, the only compulsory system of health insurance for municipal employees in the United States, came into being as the result of a charter amendment passed by the electorate on

March 9, 1937 by a vote of 76,749 to 56,615. Physicians had grave misgivings about the experiment then, but they decided to go along with the plan in view of the people's endorsement of the charter amendment. Soon the misgivings held by members of the medical profession about the plan received confirmation from actions taken by the system's board of directors, and in 1939 the medical society voiced its public criticism of the operations of the health service.

The society called attention to the fact that the medical director of the system was arbitrarily refusing patients certain services to which they were obviously entitled. Permission for hospitalization for necessary surgical or medical treatment was extremely difficult to obtain even in some cases of acute illness. Fee schedules for operations were disregarded, even though the doctor was then receiving only 50 cents on the dollar for his services.

The physicians, in truth, carried the system along by their willingness to accept whatever was available to reimburse them for their services in the month to month operations of the health service. It is only fair to point out here that fee schedules are not and never have been the source of the medical profession's objection to the system's procedures but that in all cases, from the very beginning of its operation, the forgotten man or woman—the patient—has been and continues to be the doctor's chief concern with the functions of the health service.

Suffice to say on the subject of fee schedules that an actuarial study of the system, completed early in 1942 by an independent analyst, Mr. Ralph R. Nelson, revealed that if agreed fee schedules had been paid to physicians since the start of the system, an additional \$400,000 would have been received by the professional staff members. It cannot be denied that this \$400,000 contribution by the members of the medical profession was the only thing that kept the system afloat.

The preoccupation of San Francisco physicians during the war forced them to overlook the interference of the medical director and the board of directors of the system in the treatment of patients and the undermining of professional ethics incidental to the practice of medicine under a compulsory system.

But the kettle continued to simmer until May of this year, when the lid blew off. The system's board, through its medical director, sent to those who were members of the professional staff a letter advising them to conform to certain procedures, conformity with which would place physicians in the position of betraying their oath and endangering not only the health but the very lives of their patients.

That letter, written by the medical director, was dated May 28, 1947. It was an astonishing document. Because the health service system was again in financial difficulties, physicians were bluntly advised to lower the quality of medical care provided the 17,000 city employees by limiting laboratory tests, by curtailing roentgenologic examinations and by disregarding normal diagnostic procedures.

These instructions from the medical director and the board, as I have stated, were based on the premise that they were necessary because the system was losing money, even though it had only a short time before increased its rates to its employed members by 21.5 per cent and dropped the unit value paid to doctors, by 20 per cent.

Only by economizing at the expense of their patients, physicians were flatly told, could they expect to have their fees returned to the former level or escape future reductions.

In effect the letter not only confessed that the system was actuarially unsound and could not keep its commitments to the 17,000 persons contributing to it, but it stated almost in so many

words that the members of the medical profession in San Francisco would have to cheapen the quality of medical care and deny city employees the high standard of care which was provided for private patients.

The physicians of San Francisco refused to gamble with the health of their patients to improve their own fee schedule and they will continue to reject that gamble, just as they are refusing and will continue to refuse to be parties to the continuation of a political experiment in cheap assembly line medicine.

Specifically, the system's directive told the members of the medical profession to substitute "routine examinations" for diagnostic procedures which any doctor who is worthy of his degree considers essential for the early detection of cancer, tuberculosis, pneumonia and other diseases.

The directive further advised physicians to discourage patients with "minor ailments" from seeking medical treatment, and to advise these patients to use "home remedies."

More than this, physicians were instructed that the health service system would permit hospitalization, except in emergency cases, only with specific authorization by the medical director of the system.

The hundreds of resignations which followed that directive—a directive that has never been recalled, amended or modified in any way—were submitted in protest against a type of questionable practice and unethical procedure which the directors of the health service countenanced for the sake of bolstering a medically and actuarially bankrupt system.

Consider this paragraph from the letter sent to San Francisco physicians serving the system by the medical director, with the consent of the board of directors:

"People in general have more knowledge now on medical subjects, gained from magazines, public lectures and from over the radio; also from quack advertisements in the newspapers. Much of the so-called medical knowledge gained in this way has given them a mass of false information. It has brought about many unnecessary visits to the doctor to get treatment for trivial things—such minor ailments as could be treated, as well, by their home remedies as by the doctors. Such needless calls take up the doctor's time and add a great expense for the System."

This truly amazing observation is of a pattern that would turn back the clock in medicine a hundred years if it became the medical profession's guide in considering whether or not a patient deserved treatment.

The same letter, as I have already noted, asked physicians to limit and restrict the use of laboratory tests, roentgenologic examinations and normal diagnostic procedures, to substitute routine examinations for scientific diagnosis and to discourage patients with minor ailments from seeking medical treatment and advise them to use home remedies!

In effect, a patient with a sore lip presumably would be encouraged to go to the corner drug store, buy some salve and daub it on himself, rather than to consult an ethical physician who could determine whether the lesion was a cold sore or a cancer of the lip.

I wonder whether any member of the medical profession, when his wife or child was ill, would want them to have that kind of routine examination?

I do not want to quote unnecessarily from the health service medical director's letter, but the simple truth is that it confirms in black and white the very point that I made in the opening portion of my article—that state medicine, socialized medicine, bureaucratic medicine or medicine by any similar name or term is bad medicine and can only lead to the vicious consequences that this letter makes it plain have resulted from the ten year operation of the San Francisco Municipal Employee's Health Service System.

To return briefly to that letter, the observation was made in it that the system's medical director believed that: "between 50 and 60 per cent" of the roentgenologic examinations he inspected were unnecessary. When that statement is turned around, apparently 40 to 50 per cent of the roentgenologic examinations were necessary! What type of medical practice would physicians have if they failed, due to false economy, to make proper diagnosis in 50 per cent of cases, or even in 25 per cent? Is that the kind of health service the city employees are

entitled to and to which a system of compulsion makes it necessary for them to contribute a part of their salary each month? Is that type of medical care defensible from any point of view? The physicians of San Francisco believe that it is not. No self respecting doctor, with pride in his profession, will be a party to any program to treat city employees as second class patients, to enable any system to survive which has proved itself a hopeless experiment basically, medically and actuarially.

Now, what does the record show as to the physicians' willingness to cooperate with the system in trying, despite the crippling disadvantages of compulsion and socialization, to make the system work? Physicians have contributed approximately a half million dollars in fees to which they were entitled under the very moderate fee schedule set up in the system. They have pointed out time and again through the years the right of the patients to full medical and surgical, hospital and office treatment. They have patiently sought to induce the system's medical director and board to institute procedures and practices conforming to the finest medical standards. But through the years the record will show that attempts to work with the board of the health service have been met by an arrogant refusal even to consider objections and recommendations.

Take the record leading to the present impasse. The director's letter to which I have referred was written May 28, 1947. On June 18 the society voiced a vigorous protest to the board, stating that if the health service system could not provide adequate care for its insured members it should in all fairness so advise the city employees—and not ask doctors to go against their own medical judgment when the health and possibly the lives of patients might depend on the decision.

The letter concluded: "We believe that your board, rather than attempting to bolster an unsound system by the wholly impractical and medically dangerous expedients set forth in your letter of May 28, should frankly tell the city employees that the present plan has failed.

"We believe that you should then state that you wish an expression of opinion from them as to whether an insurance-indemnity system should be established, or whether a contract should be entered into with one or several of the established voluntary systems to provide the necessary coverage." Both alternatives are permitted by the City Charter.

What was the response of the board to this communication of the society? The board met on June 24, 1947 and, according to the official minutes of that meeting, moved that the letter of the society be "filed without prejudice."

The society waited patiently for an answer for more than three and one-half months, despite the fact that the system's board was morally as well as legally bound to reply. Section 172.1 of the City Charter provides:

The Health Service Board shall receive, consider and within sixty (60) days after receipt, act upon any matter pertaining to the administration, operation or conduct of the Health Service System submitted to it in writing by any member of the system or any person who has contracted to render medical care to the members of the system.

Meantime, the medical society waited—not sixty days, but one hundred and ten days! It was never given the courtesy of a reply.

During this period the smouldering resentment against the system was bursting into flame among the physicians. A spontaneous movement to resign developed and spread like the proverbial wildfire.

I want to emphasize that this started from the bottom and flared up—not from the top down, as has been implied. The officers and directors of this society, had they been so inclined, no more could have dampened this movement than can the executives of any democratic organization thwart the wishes of the majority.

On October 8 the board of directors of the San Francisco County Medical Society dispatched another communication to the health service system's board. That letter stated that the resignations of more than eight hundred physicians would be presented on Nov. 10, 1947 unless the system was reorganized on a sound medical basis acceptable to the society and the physicians who serve the system.

The letter also stated that if a committee representing the board of the health service system wished to discuss the problem, the county medical society would be glad to cooperate.

Confronted with the resignations, the board of the system took notice of the October letter, rather than filing it along with the June letter, and condescended to talk it over. It took more than a week to get around to naming the committee, and then two of the key members were too busy to meet with representatives of the physicians.

The meeting was held Friday, October 24, and accomplished exactly nothing. The system's representatives used the occasion for indulging in personalities, which had no relation to the issues in question. They did, however, reluctantly agree to present the society's demands to the entire membership of the board.

On October 29 the board replied that it was unable to meet the society's recommendation for revision of the system. The board fell back on an opinion of the city attorney as an excuse for its failure to act. This opinion did not tie the board's hands. There were well defined remedies available, had the board wanted to find a remedy.

Physicians believe that the city employees of San Francisco and their dependents should be given the same freedom of choice to select the type of medical and hospital care that is given employees of the state of California and the city of Los Angeles.

There is nothing compulsory about either the state employees' system or the Los Angeles city employees' health system. Under these systems, the employee can elect: (1) to make provision for his medical care with his own physician; (2) to join a voluntary health insurance system with indemnity cash payments to help defray his medical and hospital bills, or (3) to enroll as a member of a voluntary medical and hospital service plan which will provide him with health care in time of illness.

After it became apparent that no sincere attempt was being made by the board to reorganize the system on a sound foundation or to adopt the alternative proposals suggested by the Medical Society, the board was notified on November 5 that it was clearly apparent no basis for further discussions existed.

The physicians' resignations were filed on November 10, and at present, according to records of the medical society, less than one hundred physicians of a San Francisco staff numbering nearly one thousand remain on the panel of the health service system.

I want to make it clear at this time that the doctors of San Francisco are not urging the selection of any particular voluntary health insurance system or medical care system. They believe that city employees should be given the right to choose between several systems—and there are over a hundred sound voluntary health insurance systems and indemnification plans operating in California today—and to select the one that best suits their needs.

The physicians of San Francisco do insist on one cardinal point, that the compulsory features of the present system must be eliminated so that third party interference between the physician and his patient can be eliminated.

The San Francisco City Charter, which created the health service system, provides two alternatives to the present compulsory system: It authorizes an insurance-indemnity plan under which beneficiaries of the system would be entitled to cash benefits to pay their medical and hospital bills. Alternatively again, it authorizes a contract with any one or several of the established voluntary health and hospital insurance systems to provide the insured beneficiaries with adequate care.

Either of these alternatives to the present system would be acceptable to the members of the medical profession, provided that membership in either plan is not compulsory. To eliminate the compulsory aspect of the system, the City Charter would have to be amended. The physicians of San Francisco are willing to support the system's board of directors in a request by them to the board of supervisors for the submission of an amendment eliminating this compulsory phase of the health service. Such amendment could be submitted to the voters in the primary next year, and the physicians would support a campaign for its acceptance by the voters.

Unless the system's board is willing to proceed in the manner that I have outlined, the physicians of San Francisco will continue to dissociate themselves from any function of the system, although—and this hardly need be repeated—they will continue to serve members of the system as private patients.

In this connection I would like to quote from the society's letter of October 8 to the system's board, which said: "Regardless of the course of action you may decide upon, we wish to assure you that there will be no interruption in the medical care provided the city employees and that doctors will continue to treat them, but as private patients, if your board fails to provide an acceptable alternative program. For your information, members of the County Medical Society maintain a physician-patient service agency known as the Bureau of Medical Economics, and that Bureau will guarantee to arrange for the finest standard of medical care in any distressed cases among city employees, regardless of ability to pay."

In conclusion, may I be permitted the observation that the medical profession is convinced that its continued refusal to submit to socialization and to arrogant bureaucratic control of its professional functions is a position that may well be applauded by any person, professional or otherwise, who believes that the American system of free enterprise is worth saving.

Washington Letter

(From a Special Correspondent)

Feb. 19, 1948.

President Urges Public Support in Combating Heart Disease

Calling for observance of National Heart Week, sponsored by the American Heart Association, President Truman asked every citizen of the United States to cooperate with his physician and his community in guarding against heart disease. Mr. Truman said, in part: "I have seen reports stating that diseases of the heart and blood vessels constitute the most frequent cause of death. One out of every three deaths in the United States is caused by them; indeed, deaths from cardiovascular disease are greater than the total resulting from the next five leading causes combined. Heart disease is also a major cause of disability. . . . The medical profession alone cannot succeed in fighting this menace without the fullest cooperation from the general public. . . . The duty of each American is to cooperate with his physician in protecting his health and that of his family and to cooperate with his neighbor in supporting community efforts directed against this enemy of the people."

Forrestal Asks Reexamination of Military Men Retired for Disability

Criticism of army disability retirements has resulted in a request to Congress by Defense Secretary Forrestal that medical reexaminations be provided for every military man retired for physical disability since 1939. Mr. Forrestal proposed that officers and enlisted men retired since that year should not be eligible to receive their pensions unless they submit to reexamination. He recommended: (1) that every person retired for physical disability since 1939 be reexamined and receive periodic reexaminations; (2) that benefits for physical disability be related to the percentage of actual incapacity for duty, which applies only to enlisted men at present; (3) that physical disability benefits be applied equally to all the armed services, both regular and reserve, officers and enlisted men, and (4) that tax exemption, if it is to apply at all, be applicable only to payments representing benefits for actual physical disability.

New Army Chief May Seek Aid of Civilian Doctors

In event of passage of universal military training, the new Army chief of staff, General Omar Bradley, successor to Gen. Dwight D. Eisenhower, is expected to follow tactics similar to those he used so successfully in improving medical service for veterans as veterans administrator. It is pointed out here that through Major Gen. Paul Hawley, who served under him as veterans' medical chief, General Bradley obtained cooperation of the deans of the seventy-seven class A American medical schools in setting up a teaching program for young resident physicians in veterans' hospitals. This work on the medical reorganization of the agency gave General Bradley contact with leading civilian educators, particularly in the medical field, and it is believed likely that he would again ask their support if required to organize the Army training program.

Medical Legislation

STATE LEGISLATION

Kentucky

Bills Introduced.—H. 168, to amend the premarital examination law, proposes to require each applicant to be examined by a physician authorized to practice in Kentucky as to the existence or nonexistence of any stage of syphilis infection that is or is likely to become communicable. S. 96 proposes the creation of a state hospital board and a hospital advisory council. The state hospital board would be required to make an inventory of existing hospitals and to develop and administer a plan for the construction of needed additional facilities. The state hospital board would further be authorized to make applications to the Surgeon General for federal funds to assist the state in carrying out its inventory and construction program. S. 135 proposes the creation of a board of examiners for the certification of clinical psychologists. S. 137 proposes the enactment of a licensing law for chiropractic hospitals to be administered by the Kentucky state board of chiropractic examiners. The proposal would also authorize the state board of chiropractic examiners to accept, on behalf of the chiropractic profession and their patients in the state of Kentucky, any funds or grants through appropriate channels and any supplies and equipment which may be made available to the state for hospital facilities, goods and services.

Massachusetts

Bill Introduced.—H. 1467 proposes regulations concerning the performing on any animal of any pain-producing experiment. Licenses to perform such experiments would be issued by the commissioner of public safety and would be for three years' duration.

Bill Enacted.—H. 91 has become chapter 28 of the Laws of 1948. It amends the medical practice act by providing for the revocation of the certificate of registration of any physician guilty of the use of narcotic drugs in any way other than for therapeutic purposes.

Mississippi

Bills Introduced.—H. 290 proposes to authorize the establishment of a scholarship program for the advanced study of nursing, which would list of forty scholarships of the value of not more than \$3,000 each. S. 291 proposes to accept assistance from these scholarships must agree to a period of time working as nurses in Mississippi equal to the number of years during which they accepted the benefits of the scholarships. H. 291 proposes to authorize the establishment of a school of nursing at the University of Mississippi and to inaugurate a scholarship program in connection therewith. S. 145 proposes the creation of a board of examiners in optometry and, among other things, proposes to declare the practice of optometry to be a profession. S. 159 proposes the enactment of a workmen's compensation law.

Bill Passed.—S. 68 passed the senate January 23. It proposes that the board of trustees of universities and colleges shall maintain the first two years of the four year medical school at Oxford, Miss., until such time as the legislature shall authorize the removal therefrom, and the remainder of the medical course to be located in conjunction with a standardized and departmentalized hospital for teaching purposes of not less than three hundred and fifty beds.

New Jersey

Bill Introduced.—A. J. Res. 2 proposes the creation of a commission of five members to make a survey of all voluntary charitable hospitals throughout the state to determine what steps can be taken to relieve existing overcrowding and to furnish additional revenue for operating costs to relieve the burden now being carried by the voluntary charitable hospitals.

New York

Bills Introduced.—A. 634 proposes the creation of a temporary state commission to make a study and survey of the prevalence and facilities for the treatment of infantile paralysis patients within the state. A. 931 proposes the enactment of a New York state health service act. According to this proposal it is the intent to encourage and assist the development of voluntary prepaid health and hospital plans and to eliminate from its provisions persons protected under voluntary plans provided such plans furnish the medical and hospital benefits established by this proposal. A. 970, A. 1194, S. 994 and S. 1072, to amend the education law relating to the practice of nursing, propose to authorize the department to license without examination graduates of accredited nursing schools from some other state who have completed a course of study considered by the department to be equivalent to that required in the state of New York and who have met all the requirements as to age, character, citizenship and preliminary education. A. 990, to amend the education law, proposes to make it the duty of each medical inspector having jurisdiction over any public school in the state to examine each pupil attending such school for symptoms of tuberculosis at least once in each school year. A. 1199 and S. 1170, to amend the workmen's compensation law, propose to include within the coverage thereof assistant resident interns or resident interns or resident physicians in certain state hospitals. A. 1558 proposes an appropriation of \$2,500,000 to the department of health to defray the cost of research in the cause and cure of cancer. A. 1586, to amend the public health law, proposes to require all hospitals or similar establishments to provide complete physical examinations annually to all employees, which physical examinations shall serve to determine the presence or absence of any communicable disease. S. 1069, to amend the education law, proposes the creation of a board of examiners of psychologists for the certification and registration of professional psychologists. S. 1182, to amend the labor law, proposes to regulate the hours of employment of registered professional nurses to not more than five days or forty hours a week

except in case of emergency and not more than eight hours in any day except in case of emergency. S. 1189 proposes the creation of a temporary commission to make a study and analysis of the advisability of grants-in-aid to cities, counties and other state subdivisions for the purpose of developing and expanding non state-operated clinics and other psychiatric facilities for the care and treatment of the mentally ill and potentially mentally ill. S. 1248, to amend the education law, proposes that x-ray diagnosis means that method of medical practice in which demonstration and examination of the normal and abnormal structures, parts or functions of the human body are made by the use of x-rays, and any person who holds himself out to diagnose or able to make or makes any interpretation or explanation by word of mouth, writing or otherwise of the meaning of a fluoroscopic or registered shadow or shadows of any part of the human body made by the use of x-rays, and also the use of x-rays or radium for the treatment of any human ailment, shall be deemed to be engaged in the practice of medicine within the meaning of the medical practice act. S. 1383, to amend the penal law, proposes that any person who either treats or offers or undertakes to treat the human body without first having complied with the appropriate statutes of the education law is guilty of a misdemeanor. S. 1422, to amend the education law, proposes that any person studying to become a registered nurse who has resided in the state of New York for two years prior to attending a school of nursing registered by the department shall receive from the department \$50 for each such month of attendance during the first and second year of attendance and \$75 for each such month of attendance during the third year of attendance.

Coming Medical Meetings

- Alabama, Medical Association of the State of, Mobile, April 15-17. Dr. D. L. Cannon, 519 Dexter Ave., Montgomery 4, Secretary.
- American Association of Industrial Physicians and Surgeons, Boston, March 28-April 4. Dr. Frederick W. Slob, 28 E. Jackson Blvd., Chicago 4, Secretary.
- American Broncho-Esophagological Association, Atlantic City, Chalfonte-Haddon Hall, April 7-8. Dr. Paul H. Holinger, 700 N. Michigan Ave., Chicago 11, Secretary.
- American College of Allergists, New York, Hotel Pennsylvania, March 12-14. Dr. Fred W. Wittich, 423 LaSalle Medical Bldg., Minneapolis 2, Secretary.
- American Laryngological, Rhinological and Otolological Society, Atlantic City, April 7-9. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.
- American Orthopsychiatric Association, New York, Hotel Commodore, April 12-14. Nina Ridenour, Ph.D., 1790 Broadway, Rm. 916, New York 19, Secretary.
- American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, Philadelphia, Feb. 26. Dr. Norman N. Smith, 291 Whitney Ave., New Haven 11, Conn., Secretary.
- American Society of Biological Chemists, Atlantic City, March 14-19. Dr. Otto A. Bessey, Public Health Research Institute, New York 19, Secretary.
- Arkansas Medical Society, Little Rock, Robinson Auditorium, April 15-17. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.
- California Medical Association, San Francisco, April 11-14. Dr. L. Henry Garland, 450 Sutter St., San Francisco 8, Secretary.
- Chicago Medical Society Annual Clinical Conference, Chicago, Palmer House, March 2-5. Dr. Willard O. Thompson, 30 N. Michigan Blvd., Chicago 2, Secretary.
- Dallas Southern Clinical Society, Dallas, Texas, Hotel Adolphus, March 15-18. Dr. Glenn D. Carlson, 1133 Medical Arts Bldg., Dallas, Secretary.
- Florida Medical Association, St. Augustine, Ponce de Leon Hotel, April 11-14. Dr. Robert B. McIver, 111 W. Adams St., Jacksonville, Secretary.
- Louisiana State Medical Society, Monroe, April 12-14. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans 13, Secretary.
- Michigan Postgraduate Clinical Conference, Detroit, Book-Cadillac Hotel, March 10-12. Dr. H. H. Cummings, 2014 Olds Tower, Lansing 8, Chairman.
- Missouri State Medical Association, St. Louis, Hotel Jefferson, March 14-17. Mr. T. R. O'Brien, 634 N. Grand Blvd., St. Louis 3, Exec. Secretary.
- New England Dermatological Society, Boston, April 14. Dr. G. Marshall Crawford, 1180 Beacon St., Brookline, Mass., Secretary.
- New Orleans Graduate Medical Assembly, New Orleans, Municipal Auditorium, Feb. 23-26. Dr. Max M. Green, 1430 Tulane Ave., Room 105, New Orleans 13, Secretary.
- Northern Tri-State Medical Association, Findlay, Ohio, April 13. Dr. Don F. Cameron, 247 W. Berry St., Ft. Wayne, Ind., Secretary.
- Pacific Coast Surgical Association, Los Angeles, Ambassador Hotel, Feb. 24-28. Dr. Carleton Mathewson Jr., Stanford Univ. Hospital, San Francisco, Secretary.
- Southeastern Surgical Congress, Hollywood, Fla., Hollywood Beach Hotel, April 5-8. Dr. Benjamin T. Beasley, 45 Edgewood Avenue S. E., Atlanta 3, Ga., Secretary.
- Southwest Allergy Forum, Oklahoma City, April 5-6. Dr. Fannie Lou Leney, 1200 N. Walker St., Oklahoma City, Secretary.
- Tennessee State Medical Association, Nashville, April 13-14. Dr. W. M. Hardy, 706 Church St., Nashville 3, Secretary.
- United States-Mexico Border Public Health Association, Laredo, Texas and Nueva Laredo, Mexico, March 20-22. Dr. M. F. Haralson, U. S. Court House, El Paso, Texas, Secretary.

GOVERNMENT SERVICES

NAVY

DISEASE IN THE NAVY DURING WORLD WAR II

In an address before the Harvard School of Public Health, Boston, February 7, Rear Admiral C. A. Swanson, Surgeon General of the United States Navy, said that no devastating epidemics swept the service during the recent war and that the reduction in the noncombat death rate, as compared with World War I, effected a saving of more lives than the total number lost through enemy action. During the war the average strength of the Navy for the four years was in the neighborhood of two and one-half millions. There were only 8 cases of smallpox, 96 of typhoid and 4 of tetanus, with two deaths in persons whose records indicated that their immunization had been incomplete. Tetanus did not develop in any combat casualty. Six hundred and fifteen cases of the rickettsial group of diseases were reported, the majority being tsutsugamushi fever in the Southwest Pacific campaigns. There were no cases of cholera, plague or yellow fever.

ACTIVATE RESERVE MEDICAL DIVISIONS

The headquarters of the Third Naval District in New York has announced that in conformance with directives from the Bureau of Naval Personnel, forty-two Volunteer Medical Reserve Divisions were activated January 15, and that four more divisions are being organized. Each division will have the following personnel: seventy-five medical corps; fifteen medical service corps; fifty nurse corps officers, and two hundred and fifty hospital corpsmen. These divisions have been set up for training purposes, but in case of national emergency the personnel may be ordered to active duty individually or as units.

NARRATIVE OF MEDICAL WORK IN WORLD WAR I

The Bureau of Medicine and Surgery has published for the first time an official historical narrative pertaining to its Medical Department in the first World War. The book entitled "The Medical Department of the U. S. Navy with the Army and Marine Corps in France in World War I" was written by Lieut. George G. Strott (HC), U. S. Navy (retired), who spent some thirty years in collecting material for this book. Lieutenant Strott was a chief pharmacist's mate in France and served

with the Sixth Marines until the end of the war. This story deals with the activities of the 2d Division, American Expeditionary Forces, and of the only major unit of the Navy Medical Department to serve as a component of an Army combat division. The three hundred and twenty-two page volume may be purchased for 75 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C.

PENSACOLA NEWS

At the invitation of Rear Admiral Frank D. Wagner, chief of Naval Air Training, the National Research Council's Committee on Aviation Psychology met at the Naval Air Station, Pensacola, Fla., January 30-31. Capt. Marcio Baeza, chief surgeon of the Chilean air force reserve and professor of surgery at the University of Chile in Santiago, was present at the meeting. Captain Baeza inspected the Naval School of Aviation Medicine and Research, the Naval Hospital and the other medical air facilities at Pensacola. After the meeting the members were guests of the local command aboard the aircraft carrier, U. S. S. *Wright*.

GRADUATE TRAINING

The Bureau of Medicine and Surgery, Washington, D. C., as of February 4, in continuing its graduate policy for medical officers, announced approval of some twenty-six assignments of officers to pursue graduate courses and residencies in various hospitals and universities throughout the country.

PERSONALS

Two new members have been appointed to the Board of Civilian Consultants to the Bureau of Medicine and Surgery, Washington, D. C.: Dr. Lowell T. Coggeshall, dean, division of biological sciences, University of Chicago, as consultant in tropical medicine, and Dr. Donald Anderson of Chicago, secretary, Council on Medical Education and Hospitals of the American Medical Association, as consultant in hospital administration.

Rear Adm. Clifford A. Swanson, Surgeon General and chief of the Bureau of Medicine and Surgery, addressed the Saturday Morning Health Forum of Harvard University School of Public Health at Boston, February 7, on "The Health Program of the United States Navy."

PUBLIC HEALTH SERVICE

DR. SCHEELE TO SUCCEED DR. PARRAN AS SURGEON GENERAL

The White House has announced the nomination of Dr. Leonard A. Scheele as Surgeon General of the U. S. Public Health Service, to succeed Dr. Thomas Parran when the latter's term expires April 6, 1948.

Dr. Scheele was born in Indiana, received his A.B. degree from the University of Michigan and his M.D. from Wayne University, Detroit. He was commissioned in the Public Health Service in 1934, was first assigned as assistant quarantine officer at the Port of San Francisco, then at the Port of Honolulu; he was health officer of Queen Anne's County, Maryland, in 1936-1937. He was officer in charge of the National Cancer Control Program of the National Cancer Institute from 1939 to 1942 and chief, field casualty section, Medical Division, Office of Civilian Defense, in 1942 and 1943. He was assigned to the Army from 1943 to 1945, serving in Military Government and Allied Commission medical operations in Sicily and later as officer in charge of the preventive medicine section at Supreme Headquarters of the Allied Expeditionary Force in Northwest Europe. He was medical representative of the medical section of the Allied Control Council in initial operations of that group in Berlin after the surrender of Germany.

Dr. Scheele was awarded the American Typhus Commission Medal for work in the control of typhus in Northwest Europe during 1944-1945, the Legion of Merit for his communicable disease control work in the European theater and the Order of Public Health from France.

From 1946 to 1947, he was assistant chief of the National Cancer Institute of the National Institute of Health and in July 1947 he became assistant surgeon general of the U. S. Public Health Service and director of the National Cancer Institute.

Dr. Parran was appointed Surgeon General in April 1936 and reappointed in 1940 and 1944. He has been a commissioned officer in the Public Health Service since 1917. Previous to his assignment as Surgeon General, he had served in fourteen states on public health research and administrative assignments and from 1930 to 1936 as commissioner of health for the state of New York. In a statement Dr. Parran said, among other things, that "the President is to be congratulated on his appointment of Dr. Leonard A. Scheele as Surgeon General of the U. S. Public Health Service. . . . I have no plans for the future. I shall be at the disposal of my commander in chief and the new Surgeon General."

VETERANS ADMINISTRATION

AID FOR OFFICIALS IN ADVISING VETERANS WHO DESIRE TO ENTER MEDICAL SCHOOL

The Veterans Administration has prepared a digest of articles previously published and has analyzed the data in a bulletin to help officials advise veterans who desire to enter medical school under the G. I. Bill or Public Law 16. The analysis shows, it is said, that veterans stand an average or better chance of completing such training successfully if they meet any, or preferably all, of the following qualifications: (1) obtain grades of B plus or better in their premedical training, (2) make particularly high grades in the natural sciences and (3) enroll in medical schools in the same educational institution in which they completed their premedical work.

In predicting success at medical school on the basis of grades received in courses on natural science, officials of the Veterans Administration emphasized that the quality of work in such courses rather than the quantity of the science courses is the important factor.

The data analyzed by the Veterans Administration disclosed that students who attend medical schools in the same educational institutions where they took their premedical training consistently make better grades than students who transfer from other schools. The percentage of failures also was appreciably lower for "native" students than for transfer students. The Veterans Administration explained the consistently superior accomplishments of "native" students by the fact that medical schools are able to consult personally with premedical faculty members about the qualifications of applicants and thus are in a position to select applicants most likely to succeed.

The bulletin published by the Veterans Administration cautioned that scholastic aptitude tests and the length of premedical training—when considered without relation to other factors—are unreliable in evaluating chances for success in medical school. In one instance scholastic aptitude tests were administered to a thousand prospective medical students. The tests correctly predicted successful completion of medical school only 53 per cent of the time. In fact, 5 per cent of the students whose classroom averages were among the highest made poor showings in their aptitude tests.

Although each year an increasing number of medical schools limit admittance only to students with bachelors' degrees, research studies, it is said, have indicated that the length of premedical training has little bearing on their future accomplishments in the study of medicine. It was concluded from this analysis that the quality rather than the extent of collegiate preparation determines eventual performance in medical school.

VETERANS' TRAINING AND EDUCATION

While World War II veterans are taking training in certain courses financed by other federal appropriations, they are ineligible for training under the GI Bill or the Vocational Rehabilitation Act (Public Law 16). The Veterans Administration's ruling held that training and education provided by the two veterans' training laws was not intended to duplicate training of veterans already enrolled in courses of study and receiving benefits for training from other government appropriations. Accordingly, veterans must select the federal program under which they prefer to enter certain types of training. Certain courses financed by federal appropriations are available to veterans as well as to other persons. These are separate from the training programs established for eligible veterans under Public Law 16 and the GI Bill (Public Law 346). Among such courses are: (1) U. S. Public Health Service training programs for persons receiving fellowships or salaries from state and other grant-in-aid funds derived wholly or in part from federal appropriations; (2) U. S. Maritime Commission training programs; (3) resident training programs in hospitals, clinics and medical or dental laboratories owned or operated by the United States, and (4) residency training for physicians and dentists in the Department of Medicine and Surgery of the Veterans Administration.

The restrictions do not apply to veterans enrolled under either law in the Veterans Administration's training program for

clinical psychologists. These trainees may receive subsistence allowances based on the training which is provided to them in educational institutions. They may be paid from government funds for part time work in Veterans Administration stations where neuropsychiatric veterans are treated. The ruling will not affect veterans training on the job under either law in those federal agencies and establishments approved by the Veterans Administration to offer such training.

The agency said that the instruction does not eliminate possible concurrent payment of benefits for study in a foreign institution under both the GI Bill and the Fulbright Act (Public Law 584, 79th Congress). When veterans complete their training under other federally supported programs, they become eligible to continue their studies or take other training under provisions of the GI Bill or Public Law 16.

PROFESSIONAL LOANS TO VETERANS

About 7 per cent of the World War II veterans who obtained G. I. business loans are in professional and semiprofessional fields such as medicine, dentistry, law, engineering, architecture, nursing, music and designing. Among other fields that veterans entered with the help of government-guaranteed loans were: retailing, 30 per cent; service trades (such as laundries and beauty shops), 20 per cent; transportation, 18 per cent; crafts, 7 per cent; sales agents, 6 per cent; manufacturing, 5 per cent; wholesaling, 4 per cent; finance, insurance and real estate, 2 per cent, and recreation and amusement businesses, 1 per cent. Average amount of each business loan made during a four month survey period was \$3,200. Nearly all the loans granted during the four month period are repayable on a monthly installment basis. Under the G. I. Bill, the Veterans Administration guarantees the lender against loss for 50 per cent of the total loan, up to a maximum of \$2,000 on non-real estate loans and \$4,000 on real estate loans. More than 85,000 G. I. business loans, totaling \$273,000,000, have been approved in the more than two years since the program's inception.

INCREASE PENSIONS FOR VETERANS OF INDIAN WARS

Effective March 1, the Veterans Administration will pay a 20 per cent increase in pensions for veterans of the Indian wars and in death pensions to their dependents. The increase was voted by the current session of Congress and signed into law by President Truman on January 19. Similar 20 per cent increases were granted to veterans and dependents of the Civil and Spanish-American wars in August 1947. Some 790 veterans and 2,200 dependents will benefit by the new law. Under the old rates payments ranged from \$20 to \$100 for veterans of Indian wars and from \$30 up for beneficiaries, depending on the number and relationship.

ENLARGE TUBERCULOSIS HOSPITAL

A contract by the Veterans Administration has been awarded to construct a hundred bed addition and alterations to the veterans' tuberculosis hospital in Livermore, Calif. J. J. Rockefeller, director of the Veterans Administration construction service, announced. The contract calls for a six story building to house one hundred new beds; additions to the kitchen and dining hall building; a new incinerator, and an addition to the laundry. To kill disease-carrying bacteria, ultraviolet lamps are to be installed in the dining hall, recreation room and other areas where patients congregate.

PERSONAL

Dr. Joseph L. Campbell, formerly of Ulster, Pa., has been appointed manager of the veterans' hospital at New Castle County Air Base, Wilmington, Del., to succeed Dr. William J. McCarty, who has been transferred to Lebanon, Pa., to manage a new veterans' hospital. Dr. Campbell served in the Army during the recent war and was awarded the Purple Heart for wounds received during the landings in Normandy, France.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ALABAMA

Personal.—Warner W. Carlson, Ph.D., has been appointed associate professor of biochemistry at the Medical College of Alabama, Birmingham. He has been associated with the Mellon Institute of Industrial Research in Pittsburgh since 1939.

Stuart Graves Lecture.—Dr. Elexious T. Bell, professor of pathology, University of Minnesota Medical School, Minneapolis, will deliver the annual Stuart Graves Lecture at the Medical College of Alabama in Birmingham on February 27. This lecture is sponsored by Beta Phi Chapter of Nu Sigma Nu Fraternity.

CALIFORNIA

Reginald Knight Smith Lecture.—The annual Reginald Knight Smith Lecture of the Mount Zion Hospital, San Francisco, will be presented by Dr. Cyril N. H. Long, dean of the Yale University School of Medicine, New Haven, Conn., and Sterling professor of physiologic chemistry, on March 2 at the hospital. His subject will be "The Influence of the Adrenal Cortex on Metabolism."

New Psychiatry Study.—The department of psychiatry of the University of California Medical School, San Francisco, has been awarded a research grant of \$13,392 by the U. S. Public Health Service to support work in the exploration of social situations used in psychotherapy under Dr. Jurgen Ruesch. An attempt will be made to gather precise information on the responses of patients to psychiatric treatment.

School of Public Health Appointments.—The University of California School of Public Health, Berkeley, has announced three appointments. Jacob Yerushalmy, principal medical statistician, states relation division, U. S. Public Health Service, has been appointed professor of biostatistics. Dr. Yerushalmy has recently returned from Denmark, where he served as consultant in the Danish tuberculosis control program. Dr. Dean A. Clark has been appointed lecturer in medical economics. Dr. Clark has recently been at the university for a series of graduate lectures on the administration of medical care programs, following which he returned to his duties as medical director of the Health Insurance Plan of Greater New York. Dr. Edwin H. Lennette, who recently became the director of the virus laboratory, California Department of Public Health, has also been appointed lecturer in public health. Dr. Lennette was a member of the field staff of the International Health Division of the Rockefeller Foundation until 1946, when he became chief of the Medical Veterinary Division of the War Department.

COLORADO

State Rural Health Conference.—The second Colorado Rural Health Conference, sponsored by the Colorado State Medical Society, will be held at the Shirley-Savoy Hotel March 2, beginning at 9 a.m. Subjects under discussion include problems encountered in establishing a county or district health unit, county health councils, the state hospital survey, responsibility of rural communities, preparing nurses for rural work and getting doctors in rural areas through general practice resident training. The honor guest at the luncheon at 12:15 will be Dr. Archie C. Sudan, Denver, formerly of Kremmling, and recent winner of the General Practitioner Award of the American Medical Association.

ILLINOIS

The Eighteenth State Cancer Clinic.—The Illinois director of public health has announced the opening of a state-aided cancer diagnostic clinic at Quincy, thus bringing to eighteen the number of such centers in Illinois. Known as the Adams County Cancer Diagnostic Clinic, the new center is located in the offices of the county health department. Regular clinic sessions will be held the first and third Mondays of each month beginning at 7 o'clock in the evening. The new clinic is under the direction of Dr. Kent W. Barber, with Dr. Frank Cohen serving as pathologist and Drs. Harold Swanberg, Stephen L. Casper and Gordon M. Perisho alternating as the radiologist. The cancer diagnostic clinics maintained by the state department of public health provide free examination and consultation service to all suspected cancer patients referred by private physicians of Illinois.

Chicago

Undergraduate Research Awards.—The Borden Company Foundation, Inc., has contributed \$2,500 to the University of Illinois for the establishment of research awards in medicine. The gifts will be known as the Borden Undergraduate Research Awards in Medicine and will be administered under the direction of Dr. John B. Youmans, dean of the college of medicine. An award of \$500 will be made each year over a period of not less than five years. All students in the graduating class who have carried out undergraduate research in the medical field will be eligible for the award.

Dr. Cole Appointed to Mission to Britain.—Dr. Warren H. Cole, professor and head of the department of surgery at the University of Illinois College of Medicine, has been appointed senior scientist attaché to the United States Mission to Britain for Science and Technology. The mission will be conducted under the jurisdiction of the U. S. Department of State. Dr. Cole, who left Chicago February 8, will serve with the mission for about three months as the representative in surgery. The mission is designed to establish liaison with British scientists in medicine, engineering and chemistry.

Purchase Building for Nutrition Institute.—Northwestern University has announced the purchase of the nine story Dunham building at 450 East Ohio Street, Chicago, which will house the recently established Institute of Human Nutrition, to be directed by Dr. Tom D. Spies, professor of nutrition and metabolism and chairman of the department in the medical school. Purchase was initiated by an advance gift of \$10,000 from Eugene Kettering of the electromotive division of the General Motors Corporation. Raising of funds in the amount of \$1,000,000 to complete the purchase of the building and to provide operating funds for the board's program of research is now under way.

First Industrial Conference on Alcoholism.—The first Industrial Conference on Alcoholism will be held in the Morrison Hotel, Chicago, on Monday, March 23. Sponsored by the Chicago Committee on Alcoholism, the conference has been designed to bring to the attention of industrial leaders throughout the country facts pertaining to the problem of alcoholic employees and to discuss ways and means of overcoming the problem. In the morning session two speakers will discuss "Alcoholism in Industry." Dr. John L. Norris of the Eastman Kodak Company, Rochester, N. Y., will speak at the luncheon. In the afternoon various types of individual treatment will be discussed and the work of the Yale School of Alcohol Studies, the Keeley Institute treatment and rehabilitation centers, as well as the Alcoholics Anonymous program, will be outlined. Industry's part in the problem will be discussed. Reservations for attending the technical session and the luncheon may be made by writing Walter O. Cromwell, vice president, Chicago Committee on Alcoholism, 816 South Halsted Street, Chicago 7.

Associate Deans Appointed.—Dr. Wright R. Adams, associate professor of medicine, and Merle C. Coulter, Ph.D., professor of botany, have been appointed associate deans in the division of biologic sciences at the University of Chicago. Working under Dr. Lowell T. Coggeshall, dean of the division, Dr. Adams, who has been in the department of medicine at the university for the past sixteen years, will be responsible for the clinical departments and the school of medicine. He will also assist in the planning of the new hospital buildings at the university: the Nathan Goldblatt Memorial Hospital for Cancer, the Charles Gilman Smith Hospital for Infectious Diseases and the Gertrude Dunn Hicks wing to Albert Merritt Billings hospital. Dr. Coulter will have charge of the nonclinical departments in the biologic sciences—anatomy through zoology. Dr. Coulter, who has been associated with the university for thirty years, received his Ph.D. degree from the university in 1919, became an assistant professor in 1921 and was appointed a full professor of botany in 1931.

IOWA

Dr. DeGowin Appointed to Committee on Blood.—Dr. Elmer L. DeGowin, associate professor of internal medicine at the State University of Iowa College of Medicine, Iowa City, has accepted assignment to the Committee on Blood and Blood Derivatives of the National Research Council's Division of Medical Sciences. The committee, according to Dr. DeGowin, is to advise public agencies on blood transfusions, blood derivatives, and plasma fractions. The University of Iowa College of Medicine has been a center for research in this field for the past decade. The National Research Council committee will help set up the new national blood program of the American

Red Cross, supplying blood for civilian, veteran and public health service hospitals. It will also advise the Army, Air Forces, Navy, U. S. Public Health Service and Atomic Energy Commission.

LOUISIANA

Personal.—Dr. Fayette C. Ewing, Pineville, has recently received a certificate from the Alumni Association of Jefferson Medical College of Philadelphia in recognition of "sixty-three years of faithful service in the traditional ideals of the medical profession."

Director of Postgraduate Pediatric Program.—Dr. Sidney S. Chipman, formerly of Norwalk, Conn., has been engaged by Louisiana State University School of Medicine, New Orleans, as associate professor of pediatrics. He will be director of the postgraduate extension program in pediatrics in the state on a joint appointment of the state university and state board of health.

MICHIGAN

One Thousand Measles Cases a Week.—The epidemic of measles, which started three months ago in Kalamazoo city and county, has spread to surrounding counties, Berrien, Kent, Cass, Ottawa, Calhoun, Barry, Eaton and Ingham being the hardest hit. A total of 1,014 cases were reported to the Michigan Department of Health during the week ending January 30. There were 66 cases of measles during the same week last year, and 628 during the same week in 1946, an epidemic year.

Conference on Venereal Disease.—A one day conference on modern diagnosis and treatment of venereal disease will be held at the Detroit Intensive Treatment Center, Herman Kiefer Hospital, Detroit, March 13 beginning at 9 a.m. Physicians of Ann Arbor, Detroit and the Michigan Department of Health will speak. Among the subjects are treatment of early syphilis, syphilis of the central nervous system, syphilis and marriage, syphilis and pregnancy and interpretation of serologic tests.

MISSOURI

Heart Association Formed.—The Missouri Heart Association was organized Dec. 14, 1947 in Jefferson City at a meeting of the former Heart Committee of the Missouri State Medical Association. Dr. A. Graham Asher, Kansas City, was elected president, Dr. C. Braxton Davis, Nevada, secretary, and Dr. Glen W. Hendren, Liberty, treasurer.

NEW YORK

Cancer Society Grants Since September.—The New York State division of the American Cancer Society, Inc., announced January 23 that it had approved projects totaling \$172,597.71 since Sept. 1, 1947. Largest of the grants included \$26,466.06 to the Monroe County branch administration education service, \$21,900 to the Broome County free cancer detection centers, \$21,140.10 to the Erie County chapter educational program, \$19,960 to the Syracuse Memorial Hospital tumor clinics, \$15,050 to Cornwall Hospital for replacing an obsolete x-ray unit and opening a detection center and \$14,000 to Nyack Hospital for its radiology course.

Licenses Revoked and Suspended.—The board of medical examiners of the state education department reports the following action taken by the board of regents: The license of Gaspare Genova, 1257 Seventieth Street, Brooklyn, has been suspended for one year, effective Dec. 11, 1947. The license of Leopold W. A. Brandenburg, 2802 Hudson Boulevard, Union City, N. J., which permitted him to practice in the state of New York, has been revoked, effective Nov. 25, 1947. Others whose licenses have been revoked are Anne Elizabeth Kuhner, 52 Gramercy Park North, New York, effective Dec. 5, 1947, and Boris Schleifer, 2001 Strauss Street, Brooklyn, effective Dec. 3, 1947.

New York City

Construct Emergency-Accident Wing.—Roosevelt Hospital began this month the construction on Fifty-eighth Street near Ninth Avenue of a two story and basement emergency-accident building at the estimated cost of \$600,000. The first floor will be devoted to emergency and accident services, the second to ward service and the basement to garage space for ambulances. The building is to be called the James I. Russell Memorial building in honor of the surgeon who died in 1944 after being associated with the hospital for more than forty years.

Personals.—Dr. Clarence E. de la Chapelle, associate dean of New York University College of Medicine, has been appointed a director of medicine at Lenox Hill Hospital. He has been for fifteen years chief of the hospital's cardiovascular service and clinic, and will continue to serve in his capacities as associate dean, director of the postgraduate division and professor of

clinical medicine at the college.—Dr. Paul W. Lapidus, formerly assistant professor of orthopedic surgery of the New York Polyclinic Medical School and Hospital, has been promoted to the rank of clinical professor of orthopedic surgery.

University Appointments.—A series of personnel changes on the staff of the Faculty of Medicine of Columbia University have been announced. Dr. Alexander B. Gutman, assistant professor, was promoted to associate professor of medicine. Also elevated to an associate professorship was Dr. Dan H. Moore, former assistant professor of anatomy. Dr. Ralph A. Deterling Jr. was appointed assistant professor of surgery and Dr. Louis David Zeidberg was named assistant professor of epidemiology, both appointments effective January 1. The appointment of Dr. James A. Miller, New York, to replace Dr. Eugene H. Pool, New York, on the joint administrative board of the Columbia-Presbyterian Medical Center was also announced. Dr. Pool resigned recently from the board of trustees of Columbia University.

Report of Eye-Bank.—The Eye-Bank for Sight Restoration, Inc., at the close of its second year announced in January that hospital affiliations in the United States had grown to one hundred and fifty and that contributions through membership support had increased 50 per cent. Affiliate eye banks have been established in Boston and New Orleans. Glaucoma clinics and other special types of clinics were said to have increased in number. Dr. R. Townley Paton, vice president of the organization, reported that in two years the eye bank had accepted 310 eyes from the public and that 90 per cent had been used for transplantation. Eyes that could not be certified as suitable for the operation were used for research. During the past year the eye bank has supplied corneal material to the Midwest and Midsouth and has sent eyes to Ohio, California, Michigan, Illinois, Pennsylvania and Texas.

OHIO

Dr. Kline Given Medal for Research.—Dr. Benjamin S. Kline, Cleveland, was given a gold medal in December by his associates in Phi Lambda Kappa for his "outstanding work in medical research." Dr. Kline is chief pathologist at Mount Sinai Hospital and a member of the faculty at Western Reserve University School of Medicine. He is most widely known for his development of a simplified slide test for detection of syphilis.

PENNSYLVANIA

State Society Honors Centenarian.—The Pennsylvania State Medical Society on February 2 presented to Mrs. Bridget B. Corcoran, Hawley, a plaque on her one hundred and third birthday. Dr. Arno C. Voight, her family physician, made the presentation. A native of Eire, Mrs. Corcoran settled in Hawley in 1868. This is the centennial year of the state medical society.

Philadelphia

Allergy Society Meeting.—The annual dinner meeting of the Philadelphia Allergy Society will be held on Wednesday, February 25, 6:30 p.m., at 2601 Parkway. Dr. Bret Ratner of New York will be the guest speaker.

Dr. Yater to Lecture.—Dr. Wallace M. Yater, formerly of the Georgetown University School of Medicine, Washington, D. C., and director of the Yater Clinic there, will speak on "Coronary Artery Disease of Young Men" on February 27 at the Klahr Auditorium of Hahnemann Medical College. The lecture is sponsored by the Beta Zeta Chapter of the Phi Delta Epsilon.

Dr. Shields Warren Speaks on Atomic Energy.—Dr. Shields Warren, Boston, delivered the Alpha Omega Alpha Annual Lecture at Jefferson Medical College, Philadelphia, February 19 at 8:30 p.m. on "Medical Aspects of Atomic Energy." Dr. Warren is director of the division of biology and medicine of the Atomic Energy Commission, pathologist to the New England Deaconess Hospital and assistant professor of pathology at Harvard Medical School.

Clinic for Practicing Physicians.—The board of managers of the Pennsylvania Hospital announced the opening on February 16 of the Benjamin Franklin Clinic on Ninth Street at Pine. The staff consists of chiefs of the various services of the Pennsylvania Hospital and their associates. The founding group is composed of Drs. Paul A. Bishop, A. Reynolds Crane, Gailfield G. Duncan, John B. Flick, Leon Herman, Robert A. Kimbrough, Joseph B. VanderVeer and Adolph A. Walking. The clinic is concerned with the medical care of private patients and offers diagnostic and consultative aid to practicing physicians. Treatment will be undertaken on the request of the referring physician.

TEXAS

Installs Chapter at Baylor.—Alpha Kappa Kappa Medical Fraternity installed Chapter Beta Upsilon at Baylor Medical School, Houston, on January 17. National officers officiated at the installation at the Rice Hotel. A banquet attended by eighty of the state alumni followed the ceremony.

Teaching and Research Tuberculosis Unit.—The sum of \$300,000 for a teaching and research unit in tuberculosis will become available to the University of Texas Medical Branch, Galveston, under the terms of the will of the late Mrs. Rosa H. Ziegler of Galveston. The Medical Branch has been named residual legatee, with the university regents as trustees. Under the terms of the will, the unit will be named the Henry and Rosa H. Ziegler Tuberculosis Hospital and will afford facilities for teaching and research in acute and chronic tuberculous conditions.

Appointed Director of Research.—Dr. Benjamin B. Wells, formerly dean of the University of Arkansas School of Medicine, Little Rock, has been appointed director of research and head of the department of clinical pathology at the University of Texas, Houston. He was graduated from Baylor University College of Medicine, Houston, 1935, and was appointed a Mayo Foundation fellow in biochemistry and physiology at the University of Minnesota, Minneapolis. In 1941 he received his Ph.D. from the University of Minnesota, Minneapolis, and then studied endocrine physiology at the Carnegie Institution of Washington. After forty-two months of service in the U. S. Army, he went in 1945 to the University of Arkansas School of Medicine, where he was clinical pathologist and director of medicine.

Annual Spring Clinical Conference.—The Dallas Southern Clinical Society will hold its seventeenth annual Spring Clinical Conference March 15-18 at Hotel Adolphus and the Baker Hotel, Dallas. There will be general assemblies, afternoon clinics, roundtable conferences, symposiums and a clinical pathologic conference. Guest physicians are F. Bayard Carter, Durham, N. C., obstetrics and gynecology; Charles D. Creevy, Minneapolis, urology; Frederick A. Davis, Madison, Wis., ophthalmology; William Dock, Brooklyn, medicine; Howard K. Gray, Rochester, Minn., surgery; Charles A. Janeway, Boston, pediatrics; Louis H. Newburgh, Ann Arbor, Mich., medicine; Reginald H. Smithwick, Boston, surgery; Arthur P. Stout, New York, pathology; Oscar Swineford Jr., Charlottesville, Va., allergy; W. Walter Wasson, Denver, radiology, and Henry L. Williams, Rochester, Minn., otolaryngology. Post-graduate lectures will be held from 11 a.m. to 12:15 p.m. March 16-18. The registration fee of \$20 covers admission to all features of the conference.

WEST VIRGINIA

Personals.—Dr. James K. Pickens, Charleston, has been appointed part time director of the division of cancer control of the state health department, succeeding Dr. Paul R. Gerhardt, who recently accepted appointment as director of the New York state division of cancer control at Albany. —Dr. Russell B. Bailey, Wheeling, who was recently named chairman of the executive committee of the West Virginia Cancer Society, has been appointed chairman of the West Virginia State Medical Association's cancer committee to succeed the late Dr. J. Ross Hunter, Charleston, and a member of the board of directors of the American Cancer Society to fill Dr. Hunter's unexpired term. —Dr. Robert L. Smith, Charleston, acting director, bureau of tuberculosis control, state department of health, left February 1 to study at the University of Michigan School of Public Health. Dr. Charles L. A. Wehr, U. S. Public Health, San Francisco, will succeed Dr. Smith as acting director.

Deadlines for Hospital Construction.—Applications for any part of West Virginia's allocation of \$1,555,350 for hospital and health center construction must be received by dates set up by the state health department. Community priority AA group must submit applications not later than March 1, 1948, communities in group A by April 1, group B on or before May 1, group C by June 1 and group D by July 1. This step was taken in view of the fact that the state's share of the funds appropriated under the provision of the Hill-Burton hospital construction act must be used by June 30, 1949. Deadline dates do not affect the priority status of any of the hospital service areas or the subsequent annual grants. According to Dr. Newman H. Dyer, state health commissioner, no project may be awarded more than 50 per cent of the funds available to the whole state in any one year. The state plan for the construction of hospitals and health centers has been approved by the State Advisory Committee on Hospital Construction.

WISCONSIN

Dr. Harper Day.—The Wisconsin State Board of Health and the State Medical Society of Wisconsin sponsored Dr. Harper Day, January 31, in honor of Dr. Cornelius A. Harper, veteran public health officer. Besides an afternoon program commemorating public health progress in Wisconsin, a reception was given in honor of Dr. and Mrs. Harper in Madison with a dinner in the evening. On the dinner program Dr. Harry B. Mustard, Commissioner, New York City Health Department, and dean of public health at Columbia University, spoke on "The Development of State and Local Health Services." Officials of departments of health of neighboring states were guests of honor. Dr. Harper was officially ending his forty-seven years of public health service in Wisconsin, thirty-nine of which he served as state health officer. A native of Wisconsin, Dr. Harper obtained his medical degree from Columbian Medical College, now George Washington University Medical School, Washington, D. C., in 1893. He was appointed to the state board of health in 1901 and in 1904 was made state health officer. He carried forward a program of disease prevention, promoted health legislation and expanded the department. In 1943 he resigned as state health officer but was retained as medical specialist in public health. Among the valuable services he continued to render was the preparation of an authoritative history of public health in Wisconsin, being an actual compilation of the minutes of the State Board of Health since its inception in 1876.

GENERAL

Personal.—Mildred W. S. Schram, Ph.D., who has served the International Cancer Research Foundation as secretary since its organization in June 1932, resigned effective January 15. This foundation was reorganized and renamed the Donner Foundation two years ago.

Medical Public Relations Meeting.—The Council of the New England States Medical Societies will meet March 7 from 1:30 to 5 p.m. at the Copley Plaza Hotel, Boston, to discuss "The New England Doctor and His Public." The officers of every state, county and district medical society in New England, the members of committees on public information, public relations, public policy and radio, and any New England physician interested in learning more about medical public relations are invited to attend. Consultants will be outstanding specialists in radio, press and public health.

Dietetic Association Award.—An award for outstanding accomplishment, including a grant of \$1,000, was presented February 6 to the American Dietetic Association by the Nutrition Foundation, New York. The award, the first of its type to be given by the Nutrition Foundation, was authorized by the group's board of trustees for the purpose of giving dietitians greater recognition for their professional service to the public. The citation read in part, "In recognition of the leadership, inspiration and diligence of its members in applying and in developing the science of nutrition in hospitals, government service, food clinics, public health agencies, school lunchrooms, colleges, universities and industrial organizations, for the advancement of human health."

Blood Bank Association Meetings.—At a meeting of the executive committee of the American Association of Blood Banks in Dallas, Texas, January 31, plans were made for the annual meeting in Buffalo, August 26-28, immediately following the meeting of the International Hematology Society there. The association was organized Nov. 19, 1947, at Dallas (THE JOURNAL, Dec. 27, 1947, p. 1161). Membership is of two classes: institutional membership is available to ethical, independently operating and policy-making, nonprofit institutions, including those operated by American Medical Association-registered hospitals engaged in blood banking. Individual membership is open to any person interested in blood banking. Information may be obtained from the secretary, American Association of Blood Banks, 3301 Junius Street, Dallas, Texas.

Court Fines Manufacturers of Surgical Bandages.—The Attorney General has announced that the district court at Boston, February 5, imposed fines totaling \$23,001 in a criminal antitrust case involving the major manufacturers in the United States of surgical bandages. This followed pleas of nolo contendere by all of the corporate and individual defendants. The fines imposed by Judge George Sweeney were as follows: Johnson and Johnson, \$5,000; Johnson and Johnson International, \$5,000; Kendall Co., \$5,000; Parke, Davis & Co., \$5,000; Earl E. Dickson, vice president, Johnson & Johnson, \$1,000; L. H. Nichols, manager of hospital dressings, the Kendall Company, \$1,000; Arthur Clapham, director of overseas operations, Johnson & Johnson, and president of Johnson &

Johnson International, \$500; Charles K. Perkins, general sales manager, the Kendali Company, \$500; E. Briar, secretary and foreign sales manager, Parke, Davis & Co., \$1. The indictment, which was returned Nov. 21, 1946 by a Grand Jury at Boston, charged the defendants with a conspiracy to restrain domestic and foreign trade through an agreement to fix the prices of surgical dressings. Assistant Attorney General John F. Sonnett, in charge of the antitrust division, stated: "The defendants in this case produced and sold \$35,000,000 of surgical dressings in 1945, which was about 75 per cent of the total in the United States. It is believed that the indictment has already had the effect of eliminating restraints in this industry. The fines assessed should further encourage genuine competition in this field. It is important that purchasers should be able to obtain these indispensable products on reasonable terms."

Inter-American Cardiological Congress.—The third Inter-American Cardiological Congress, sponsored by Michael Reese Hospital, Chicago, will be held in Chicago at the Michael Reese Hospital and at the Stevens Hotel from June 13 to 17. This congress is under the auspices of the Inter-American Society of Cardiology and the National Heart Associations of the Western Hemisphere. Official members are the delegates chosen by the National Heart Associations or, in a country in which there is no heart association, by the national medical society. The names of proposed delegates must be submitted to the president of the congress for approval before appointment can be made. Active members are physicians approved by the National Heart Associations or in some Latin-American countries by Latin-American members of the Inter-American Society of Cardiology's board of directors. All members outside the Western Hemisphere will be appointed by the president of the congress. Physicians wishing to participate in the congress are asked to fill out an application blank and return it together with the \$14 registration fee to the office of the III Inter-American Cardiological Congress, Michael Reese Hospital, Twenty-Ninth Street and Ellis Avenue, Chicago 16, not later than April 1. The fee may be made payable to Dr. Richard Langendorf, secretary. Official languages of the Congress will be English, French, Portuguese and Spanish. Local cooperating institutions will be the Institute of Medicine of Chicago, Chicago Medical Society, Chicago Society of Internal Medicine, Chicago Pediatric Society and the medical schools of the universities of Chicago, Illinois, Loyola and Northwestern.

Annual Accident Toll.—The National Safety Council reports that 100,000 persons died in accidents during 1947 and that 10,500,000 were injured, with the resulting economic cost of \$6,700,000,000. The 1947 toll is 2 per cent above that for 1946. Home accidents deposed traffic accidents as the nation's number one killer, and all accident classifications except traffic and military personnel showed increases. The council pointed to a 4 per cent decrease in traffic deaths as the most encouraging spot in the accident picture despite a 9 per cent increase in travel. Deaths from accidents in 1947 as compared to 1946 were as follows:

	1947	1946	Change
All accidents	100,000	98,033	+ 2%
Motor vehicle	32,000	33,411	- 4%
Home (civilian)	33,500	32,500	+ 3%
Occupational (civilian)	17,000	16,500	+ 3%
Public (civilian; not motor vehicle)	19,000	17,000	+ 12%
Military personnel	1,600	2,000	- 20%

The all-accident death rate was 69.7 per hundred thousand population, some of the causes of death being falls, 26,900; burns, 8,700; drownings, 7,900; firearms, 2,600, and catastrophes in which the toll was at least five lives, 2,100. Seven catastrophes caused 50 or more deaths—the Texas City explosion, the Texas-Oklahoma tornado in April, the Centralia, Ill., coal mine explosion, the Gulf Coast hurricane in September and three airline crashes. Traffic accidents caused also about 1,100,000 non-fatal injuries. Among cities with 200,000 population, Jacksonville, Fla., showed the largest reduction in traffic fatalities (54 per cent). The home accident death total was 3 per cent above that of 1946. Disabling injuries from home accidents numbered 5,000,000, and wage loss, medical expense and the overhead costs of insurance totaled about \$700,000,000. There were about 3 per cent more deaths from occupational accidents than in 1946. While all industrial employment increased about 5 per cent, disabling injuries from accidents at work numbered about 2,050,000. The economic loss from occupational accidents was about \$2,500,000,000. Coal mine deaths rose to 1,039 in the first eleven months of 1947, 22 per cent above the 1946 figure. Railroad employee fatalities were 632 in the same period, an increase of 4 per cent. Fatal airplane accidents in the domestic passenger-carrying operations of scheduled air transports numbered six with a death toll of 217, including 199 passengers, 17 crew members and 1 other person.

CANADA

Personal.—Dr. Thomas C. Routley, Toronto, has received the insignia of Commander, Civil Division of the Most Excellent Order of the British Empire (C.B.E.), from His Majesty the King. Dr. Routley received the award for his service during World War II at a ceremony held by His Excellency the Governor General of Canada at Government House, Ottawa, February 10.

Clinical Meeting.—A clinical evening meeting will be held at the Royal Victoria Hospital, Montreal, on March 5, for the Montreal Medico-Chirurgical Society. On March 19, Dr. Bernard B. Raginsky, Montreal, will address the society in its own rooms on "Psychosomatic Medicine—Twenty Years' Experience," and Dr. Fraser B. Gurd, Montreal, will speak on "Twenty-Five Ways of Getting Into Trouble Treating Fractures."

Award for Papers on Shoulder Lesions.—The secretary of the Province of Quebec, the Honorable Omer Côté, recently announced the various winners in the literary and scientific competition for 1947. Dr. Herbert F. Moseley of Montreal received the first prize of \$800 in the field of medicine for his series of papers on surgery of shoulder lesions. The winners were selected by a jury whose members conveyed their decisions in writing to the secretary of the province.

LATIN AMERICA

Medical Congress.—The Second Congreso Peruano de Cirugia will be held in Lima March 15-20, under the auspices of the government of Peru, with Dr. Alberto Sabogal, president. Official speakers are: Dr. Guillermo Gastaneta on "Inguinal Hernia"; Dr. Fortunato Quesada on "Assistance of the Traumatized in Peru," and Dr. Carlos Peschiera on "Abscess of the Lung." The fee is \$15 (100 gold soles). Information is obtainable from the Committee on Organization, Camana 773, Lima, Peru.

New Medical Journal.—*Archivos Argentinos de Kinesiología* of Buenos Aires, official organ of the School of Kinesiology of the Faculty of Medical Sciences of Buenos Aires, recently appeared. Drs. Juan M. Nagera and Belisario A. Moreno are editor and associate editor, respectively, and Drs. Claudia O. Ceci and Armando G. Cotone are assistant editors. The first issue of November 1947 includes articles by Drs. Nicanor Palacios Costa of Buenos Aires, Pablo Izaguirre, Carlos Fonso Gandolfo, Elena T. de Albino, Juan M. Nagera, Belisario A. Moreno and Jaime Catcula.

CORRECTION

Heparin in Pitkin Menstruum Not Given Intravenously.—The answer to the last question on page 303 in *THE JOURNAL*, January 31, stated that heparin may be given subcutaneously or intravenously in the Pitkin menstuum. This was an error. Heparin may be given subcutaneously or intramuscularly in the Pitkin menstuum but not intravenously.

Marriages

ROBERT JOSEPH BARRETT Jr., Washington, D. C., to Miss Agnes Gertrude McGann of Weston, Va., Sept. 20, 1947.

LAVINIA GOULD MACKEYE, Ann Arbor, Mich., to Mr. Ezra G. Benedict Fox of Tenafly, N. J., at Baltimore recently.

WALTER DICK BIGFORD, Port Edwards, Wis., to Miss Frances Emilie Hambrick at Glen Wilton, Va., recently.

BEN O. STANDS, La Fontaine, Ind., to Miss Marjorie Lee Powell in Elizabethtown, N. C., Oct. 23, 1947.

CHARLES H. LAPAN, Las Animas, Colo., to Miss Ferne Garon of Chicago at Pueblo, Colo., Aug. 31, 1947.

PASQUALE S. TEST, Youngstown, Ohio, to Miss Jeanne Catherine Reed of Butler, Nov. 8, 1947.

DONALD STERLING RAINES, Syracuse, N. Y., to Miss Marian Reinhardt of Brooklyn, Sept. 20, 1947.

Harry L. Mills, Gouverneur, N. Y., to Mrs. Margaret Stevens of New York, Dec. 8, 1947.

RAYMOND M. WETRICH to Miss Mary Jane Wallace, both of Rochester, N. Y., Sept. 20, 1947.

MARTIN HERBERT ZWERLING to Miss Nancy Ann Solomon, both of Brooklyn, recently.

PETER ROODY, Astoria, L. I., N. Y., to Miss Lula Athans, Sept. 21, 1947.

Deaths

Percy Tilson Magan † Los Angeles; born in Gorey, Ire., Nov. 13, 1867; University of Tennessee College of Medicine, Memphis, 1914; became dean and professor of medicine at the College of Medical Evangelists, where he served as a trustee and professor of public health and in 1934 was appointed head of the newly created department of legal and cultural medicine; in 1928 became president at the college, serving until his retirement and election to the position of president emeritus in 1942; professor of history from 1891 to 1901 and dean from 1899 to 1901 at Battle Creek College; dean of Emmanuel Missionary College, Berrien Springs, from 1901 to 1904, when he became dean of the Nashville Agricultural Normal Institute at Madison, Tenn., serving until 1915; an Affiliate Fellow and from 1927 to 1930 member of the House of Delegates of the American Medical Association; fellow of the American College of Physicians; member of the American Hospital Association, National Tuberculosis Association, Southern California Medical Association, League for Conservation of Public Health and the Society of American Bacteriologists; a trustee of the Los Angeles County Medical Association and formerly vice president of the California Medical Association; chairman of the anatomy board, southern division, department of public health; served as a member of the board of medical examiners; trustee of the medical board of Los Angeles County General Hospital; editor of *Health Magazine*; died Dec. 16, 1947, aged 80, of heart disease.

Julian Lamar Rawls † Norfolk, Va.; born in Carrsville, Va., July 26, 1881; Medical College of Virginia, Richmond, 1904; the ninetieth president of the Medical Society of Virginia; past president of the Norfolk County Medical Society, the Seaboard Medical Association, the Southeastern Surgical Congress and the Association for the Study of Neoplastic Diseases; fellow of the American College of Surgeons; held the rank of lieutenant commander in the Naval Reserve from 1933 to 1939 and later surgeon in the U. S. Public Health Service Reserve; in 1941 member of the House of Delegates of the American Medical Association; a vice president of the Virginia Cancer Foundation; during World War II chairman of the medical division of the procurement and assignment service of the Second Congressional District; since 1910 on the staffs of St. Vincent De Paul, the Norfolk General and the Leigh Memorial hospitals, and at various times was president of each; was largely responsible for the establishment in 1938 of a diagnostic tumor clinic; at the time of his death was on the Governor's Advisory Legislative Council on Medical Matters; in October 1947 received the first J. Shelton Horsley Memorial Award of Merit, presented by the Virginia Division of the American Cancer Society in recognition of his contributions to the cause of cancer control; president of the Tidewater Hospital Service Association since its inception in 1935; died January 18, aged 66.

Jefferson Cumley Pennington † Nashville, Tenn.; born in Rockford, Ala., March 8, 1892; Vanderbilt University School of Medicine, Nashville, 1923; specialist certified by the American Board of Urology, Inc.; president of the Mid-South Post Graduate Assembly; past president and one of the founders of the Southeastern Urological Association; served as secretary and chairman of the urologic section of the Southern Medical Association; past president of the Middle Tennessee Medical Association; member of the Southeastern Surgical Congress and the American Urological Association; fellow of the American College of Surgeons; served during World War I; instructor in clinical urology at the Vanderbilt University School of Medicine; affiliated with the Vanderbilt University, Nashville General, Protestant and St. Thomas hospitals; urologist, Davidson County Tuberculosis Hospital and Florence Crittenton Home; consulting urologist to the Central State Hospital; died in the Nashville General Hospital Dec. 12, 1947, aged 55, of coronary thrombosis.

William John L. Lyster † Colonel, U. S. Army, retired, Washington, D. C.; born in Detroit on July 9, 1869; Detroit College of Medicine, 1894; received the degree of doctor of public health from the University of Pennsylvania, Philadelphia, 1911; fellow of the American College of Surgeons; joined the medical corps of the U. S. Army in 1900; served in China and on the Mexican border; during World War I was awarded the Order of Companion of St. Michael and St. George by the British after serving as liaison officer between American and English medical forces; later served at various army posts throughout the United States; retired Sept. 30, 1941 at his own request after thirty years' service; at one time professor of

military science and tactics at the Harvard Medical School in Boston; developed the "Lyster Bag" for sterilizing drinking water; died May 20, 1947, aged 77, of coronary thrombosis.

William H. Chaffers, Lewiston, Maine; born in Worcester, Mass., 1887; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, Canada, 1909; member of the American Medical Association, American Academy of Ophthalmology and Otolaryngology and of the New England Otolological and Laryngological Association; specialist certified by the American Board of Otolaryngology; formerly a member and at one time chairman of the board of education; director of the Manufacturers' National Bank; affiliated with St. Mary's General Hospital, where he died Nov. 29, 1947, aged 60, of coronary thrombosis.

Arnt Grundtvig Andersen † Minneapolis; born in Minneapolis Dec. 31, 1881; University of Minnesota College of Medicine and Surgery, Minneapolis, 1934; fellow of the American College of Surgeons; served during World War I; for his services during World War II was awarded the selective service medal and certificate of merit; affiliated with the Lutheran Deaconess and Swedish hospitals; died in the University Hospital Nov. 1, 1947, aged 66, of air embolism and metastatic carcinoma of the liver, following an intestinal resection and emergency tracheotomy.

James Baird † Flint, Mich.; Detroit College of Medicine, 1896; affiliated with Hurley, St. Joseph and Women's hospitals; died in Goodrich (Mich.) General Hospital Nov. 20, 1947, aged 75, of cirrhosis of the liver.

Angus J. Barter, Tacoma, Wash.; Washington University School of Medicine, St. Louis, 1908; member of the American Medical Association; died Nov. 13, 1947, aged 72.

Charles Herbert Bruner † Greenfield, Ind.; Indiana University School of Medicine, Indianapolis, 1915; served during World War I; for many years president of the city school board; member of the city board of health; past president of the Hancock County Medical Society; died Nov. 16, 1947, aged 60, of myocardial failure.

Jerome Stuart Chaffee † Sharon, Conn.; University of Pennsylvania Department of Medicine, Philadelphia, 1897; fellow of the American College of Surgeons; served as health officer and medical examiner; affiliated with the Sharon Hospital; died Nov. 26, 1947, aged 74, of carcinoma of the prostate.

Ralph Edmund Conn, Uniontown, Pa.; Medico-Chirurgical College of Philadelphia, 1913; died Nov. 27, 1947, aged 57.

Charles C. Copeland, North Madison, Ind.; University of Louisville (Ky.) Medical Department, 1889; member of the American Medical Association; died Nov. 20, 1947, aged 83, of heart disease.

J. Willis Demarest, Hackensack, N. J.; University of Louisville (Ky.) School of Medicine, 1927; member of the American Medical Association; city and school physician; affiliated with the Hackensack Hospital; died Nov. 18, 1947, aged 48, of coronary heart disease.

James W. Dixon, Golconda, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1888; served one term as mayor of Golconda; died in the Good Samaritan Hospital in Mount Vernon, Nov. 15, 1947, aged 89, of prostatic obstruction and bronchopneumonia.

William C. Frost, Uniontown, Pa.; University of Pittsburgh School of Medicine, Philadelphia, 1908; died Nov. 26, 1947, aged 72, of carcinoma of the colon.

Fortunat Gagnon, Providence, R. I. (licensed in Rhode Island, by years of practice); died Nov. 16, 1947, aged 89, of cardiovascular disease.

Edward Thomas Gallagher, St. Louis; Lincoln Memorial University Medical Department, Knoxville, Tenn., 1916; member of the American Medical Association; served during World War I; for many years affiliated with the Veterans Administration Hospital in Jefferson Barracks, Mo.; died Nov. 17, 1947, aged 70.

Arthur Edison Gammage † Rio, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1906; junior professor of gynecology and obstetrics at his alma mater from 1908 to 1912; served during World War I; from 1919 to 1923 superintendent of the Municipal Contagious Disease Hospital in Chicago, where he was on the staffs of the Illinois Masonic and Edgewater hospitals; died in Fort Lauderdale, Fla., Dec. 31, 1947, aged 66.

Dan Fulkerson Glasgow † Tyrone, Pa.; Jefferson Medical College of Philadelphia, 1909; died Dec. 23, 1947, aged 65, of carcinoma.

Walter Ashley Glines • San Juan, Puerto Rico; College of Physicians and Surgeons, Baltimore, 1906; fellow of the American College of Surgeons; served at the Panama Canal project and was decorated by the French government at the beginning of the century; served during World War I; member of the Insular Board of Health; attending urologist, University Hospital of the School of Tropical Medicine, Presbyterian Hospital and the U. S. Public Health Service; died at his home in Santurce Nov. 16, 1947, aged 67, of arteriosclerosis.

Alexander R. Hall • St. Paul; McGill University Faculty of Medicine, Montreal, Canada, 1900; formerly on the faculty of the University of Minnesota Medical School, Minneapolis; past president of the Minnesota Academy of Medicine; for many years on the staff of Ancker Hospital; died Nov. 27, 1947, aged 73.

James Kiah Hamilton • Alameda, Calif.; Medical Department of the University of California, San Francisco, 1903; an Affiliate Fellow of the American Medical Association; past president of the Alameda County Medical Society; served in France during World War I; for many years member of the city board of health; formerly on the staff of the Alameda Sanatorium; died Dec. 17, 1947, aged 67, of coronary occlusion.

Loring Hammer, Luray, Va.; Medical College of Virginia, Richmond, 1909; member of the American Medical Association; director of the First National Bank; died in Page Memorial Hospital Nov. 23, 1947, aged 64, of chronic nephritis and encephalitis.

Daniel Clyde Hankey • Council Bluffs, Iowa; Harvard Medical School, Boston, 1915; city health officer; served with the American Red Cross in the Balkan countries during World War I; affiliated with the Jennie Edmundson Memorial Hospital; died Nov. 20, 1947, aged 64, of coronary sclerosis.

Dausa Dow Hartwell, Marion, Ill.; St. Louis College of Physicians and Surgeons, 1901; served during World War I; died Nov. 18, 1947, aged 69, of cerebral hemorrhage.

Henry Heiman • New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1890; formerly professor of pediatrics at the New York Polytechnic Medical School and Hospital; member and formerly vice president of the American Pediatric Society; for many years affiliated with Mount Sinai Hospital, where he died Nov. 16, 1947, aged 82, of arteriosclerosis.

Francis Freeman Henderson • Boston; Tufts College Medical School, Boston, 1911; affiliated with the Boston City Hospital; died in Milton Nov. 20, 1947, aged 61, of acute cardiac dilatation and diabetes mellitus.

James Isaac Huggins • Bowling Green, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1901; died Nov. 19, 1947, aged 75, of myocarditis.

Ethan Alexander Ish, Waterloo, Ind.; Chicago College of Medicine and Surgery, 1909; member of the American Medical Association; served during World War I; died Nov. 19, 1947, aged 70, of cardiac decompensation and hypertension.

Oliver M. Johnson, Water Valley, Ky.; Eclectic Medical Institute, Cincinnati, 1885; died in Fulton Nov. 24, 1947, aged 85, of pneumonia.

Samuel Edward Johnson, Tampa, Fla.; Meharry Medical College, Nashville, Tenn., 1908; died recently, aged 66.

William Charles Keller, Philadelphia; Medico-Chirurgical College of Philadelphia, 1915; member of the American Medical Association; served during World Wars I and II; affiliated with the Philadelphia General Hospital; died in the U. S. Naval Hospital Nov. 21, 1947, aged 56, of heart disease.

Walter Norwood Keylor, Leacock, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1897; member of the American Medical Association; served during World War I; died in Lancaster (Pa.) General Hospital Nov. 6, 1947, aged 79.

Avery Ionia Lewis, Mouthcard, Ky.; Tennessee Medical College, Knoxville, Tenn., 1908; died in the Eastern State Hospital in Lexington Nov. 20, 1947, aged 72, of hypostatic pneumonia.

Edward Orton Little, Indianapolis; State College of Physicians and Surgeons, Indianapolis, 1907; served during World War I; for many years affiliated with various Veterans Administration hospitals; died at his home in Danville, Ind., Nov. 18, 1947, aged 69, of adenocarcinoma of the gallbladder.

Ignazio B. Loncao, Brooklyn; Regia Università degli Studi di Palermo, Facoltà di Medicina e Chirurgia, Italy, 1897; died in Bethany Deaconess Hospital Nov. 21, 1947, aged 75.

Samuel McKee Lougeay • Belleville, Ill.; Barnes Medical College, St. Louis, 1899; veteran of the Spanish-American War; died Nov. 22, 1947, aged 77, of coronary occlusion.

Charles Allen McDonald • Columbus, Ohio; Chicago College of Medicine and Surgery, 1913; a medical officer during World War I; assistant medical examiner for the Pennsylvania Railroad; member of the Columbus Academy of Medicine; died Nov. 23, 1947, aged 62, of hypertension and diabetes mellitus.

Ray Thomas McDonald • Bridgton, Maine; Tufts College Medical School, Boston, 1918; member of the Massachusetts Medical Society; served as senior medical officer at Lawrence Memorial Hospital in Medford; died Dec. 5, 1947, aged 61, of coronary thrombosis.

John Quincy McDougald • Philadelphia; Leonard Medical School, Raleigh, 1897; affiliated with the Frederick Douglass Memorial Hospital; died recently, aged 78.

James Franklin MacGeagh, Detroit; Detroit College of Medicine, 1904; died recently, aged 76.

Edwin Robert McGrath, Cincinnati; Medical College of Ohio, Cincinnati, 1902; served during World War I; for many years district health officer; died in the Veterans Administration Hospital in Dayton recently, aged 67.

Donald Edward MacIntyre, Kimball, W. Va.; Hahnemann Medical College and Hospital of Philadelphia, 1941; interned at Homeopathic Hospital in Providence, R. I.; served during World War II; killed in an airplane accident at Ward, Nov. 9, 1947, aged 32.

William Chalmers Mount, Kirklint, Ind.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; member of the American Medical Association; affiliated with the Clinton County Hospital, Frankfort; died Nov. 24, 1947, aged 68, of coronary occlusion.

Alfred Shelton Oliver Jr. • Imola, Calif.; Rush Medical College, Chicago, 1905; at one time medical superintendent of Eastern State Hospital at Medical Lake; affiliated with Napa State Hospital; specialist certified by the American Board of Psychiatry and Neurology; died Nov. 23, 1947, aged 66, of cerebral hemorrhage.

Antony Parsons • Valley, Neb.; John A. Creighton Medical College, Omaha, 1910; at one time a medical missionary in the Belgian Congo; for many years served on the school board; died Nov. 25, 1947, aged 70, of coronary disease.

William Parsons, Green Castle, Mo.; American Medical College, St. Louis, 1890; died Nov. 20, 1947, aged 85.

James Frank Paulin, Oak Park, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1894; died Nov. 13, 1947, aged 74, of chronic myocarditis.

Arthur A. Salvin • New York; Universität Zurich Medizinische Fakultät, Switzerland, 1911; fellow of the American College of Surgeons; affiliated with Sydenham Hospital, where he died Nov. 19, 1947, aged 66.

Emanuel John Senn, Chicago; Rush Medical College, Chicago, 1893; son of the late Dr. Nicholas Senn; member of the Chicago Surgical Society; formerly on the faculty of his alma mater as associate professor of surgery and the staff of Presbyterian Hospital; served during World War I; died Dec. 14, 1947, aged 78, of coronary occlusion.

Charles Edwin Spencer, Verona, Miss.; Vanderbilt University School of Medicine, Nashville, Tenn., 1907; served during World War I; died recently, aged 63, of pulmonary carcinoma.

Jack Harold Tritt, Fort William, Ontario, Canada; University of Toronto Faculty of Medicine, Toronto, 1940; resident physician at the Jewish Hospital in St. Louis; died suddenly, Nov. 18, 1947, aged 31.

Ralph Arthur Voigt, Hot Springs National Park, Ark.; St. Louis College of Physicians and Surgeons, 1918; died Nov. 8, 1947, aged 56.

Rome Maynard Webster, Dayton, Ohio; Hahnemann Medical College and Hospital of Philadelphia, 1907; member of the American Medical Association; on the consulting staff of the Miami Valley Hospital; died Nov. 25, 1947, aged 64, of carcinoma of the thyroid.

Carl W. Wilson, Fredonia, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1899; died recently, aged 77, of carcinoma.

Roy Alvin Zink • Tulsa, Okla.; Kansas City (Mo.) College of Medicine and Surgery, 1918; member of the staff of the Hillcrest Memorial Hospital; died Dec. 13, 1947, aged 53, as a result of accidental gunshot wounds incurred while cleaning a gun preparatory to a hunting expedition.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 28, 1948.

Collision With the Government Over the National Health Service

The stage seems fully set for a head-on collision of the British Medical Association with the government over the National Health Service Act. As shown in previous letters to *THE JOURNAL*, Mr. Bevan, the minister of health, has not made any concessions on the objections made by the representatives of the medical profession but has confined himself to offering modifications of the act if shown to be necessary in its working. The dominant objection is that the aim of the government is the nationalization of the practice of medicine and that the act is only a beginning of this process. The socialist government's avowed policy is nationalization of industries, and it has already accomplished this in the case of the Bank of England, the coal mines and the railways; it is preparing to nationalize the iron and steel industries. The government wants to nationalize the medical profession, but the physicians strongly object. Doctors do not want to lose their freedom and become state officials. They would lose even the right of medical publication, for a state official can publish nothing relating to his work without permission from his superiors.

The form of a plebiscite of 56,000 doctors of the British Medical Association on January 31 is in three sections:

1. "I approve/disapprove of the National Health Service Act in its present form.
2. "I am in favor/I am not in favor of accepting service under the Act in its present form.
3. "I agree to abide by the decision of the majority and undertake not to enter the service if the answers on question 2 reveal a majority against the undertaking as defined in paragraph 4 accompanying the plebiscite form." According to this, if the votes of consultants and specialists (not holding full time salaried posts) and general practitioners show a majority against accepting service under the act, and if the majority includes approximately 13,000 general practitioners of the estimated 20,500 (about two-thirds), the British Medical Association will advise its members not to enter into any contract under the act in its present form but to continue their service to patients and other professional work.

The correspondence columns of the *British Medical Journal* are full of letters against the act in its present form. In an editorial entitled "Why be Fearful?" readers are informed that the association has substantial funds to aid a doctor who votes against acceptance to overcome temporary difficulties. Dr. Dain, chairman of the council of the medical association, states that the act is directed toward the establishment of full time state medical service. The state will have a monopoly of all hospitals, and the private ownership of practices is to be abolished. The medical profession holds that a full time service will be harmful to medicine, and therefore to the public. The doctor can never give his best to the individual patient unless he feels that he has full responsibility for his own actions.

Censorship on Medical Publication Under the National Health Service Act

A surgeon of literary eminence, Mr. Johnston Abraham, has called attention in the *British Medical Journal* to the danger of government censorship of medical writings if doctors become servants of the state in the National Health Service. This

already exists in the Ministry of Education, under which no official is permitted to write educational books unless express permission has been given. In medicine such a situation would be disastrous, for articles or books criticizing official lines of treatment might be frowned on, held up or even suppressed. The danger pointed out by Mr. Abraham is confirmed by Mr. R. F. West, chairman of the medical group of the Publishers Association. He describes it as a matter of first importance, not merely to the medical profession but to the nation, that the doctor should be free to publish. In the House of Commons the question was asked: "What are the general principles under which state employees are allowed or forbidden for payment to write for publication on technical matters peculiar to their specialization?" To this the financial secretary to the treasury replied: "A Crown servant must obtain the consent of the head of his department for the publication of any work the subject matter of which is connected with his official duties or those of other public servants. In cases where the work is considered to owe its value exclusively to the author's ability and research, no special arrangements are made. In other cases the government may either arrange for official publication or stipulate that copies should be supplied for the public service at a special rate. These rules apply to the ministry of health. No rules have yet been made for employees under the ministry of health." This reply leaves the position of the doctor to be employed under the National Service Act somewhat obscure. If he is classified as a crown servant he will apparently seldom, if ever, be entirely free to write, and there is considerable danger that regulations will be laid down similar to those for other government employees. These would bring to an end the present freedom of expression of medical opinion.

Health of London Children Improved Despite War Shortages

Sir Allen Daley, medical officer and school medical officer of the London County Council, stated in his report for 1946, which has recently been published, that in spite of difficulties and shortages due to the war the school children of London had not suffered in health. Indeed, there was a higher percentage whose health was recorded as excellent—17.96 per cent in 1946 compared with 16.24 per cent in the prewar year of 1938—and a lower proportion of children was assessed by the school doctors to be in a state of subnormal nutrition—5.58 per cent subnormal and 0.04 per cent bad in 1946 compared to 6.50 and 0.06 per cent in 1938. Also there was a lower incidence in children of pathologic conditions of the ear, nose and throat and a smaller incidence of dental defects. In each age group there was in 1946 a higher proportion of children with normal eyesight. The reason for this improvement, which began with the war and has persisted, is not known. The incidence of cardiac defects in 1946 was half that recorded in 1938, and there appeared to be a decrease in the incidence of juvenile rheumatism. This report bears out the statement in a previous letter that the sensational attempts to suggest that the British people are being starved are unfounded. It is of interest that this improvement in the health of children runs parallel with a general improvement in vital statistics.

Traveling Professor of Surgery

Sir Hugh Cairns, Nuffield professor of surgery at Oxford, left England Dec. 23, 1947, for a three months' visit to Australia and New Zealand as the first Arthur Sims traveling professor. He will deliver lectures and take part in research and post-graduate teaching. It is also being arranged for him to visit the principal medical centers of South Africa next summer. It is confidently hoped that this traveling professorship will not only do much to stimulate the development of surgery but will also prove a further valuable link between the nations of the British Commonwealth.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, Jan. 3, 1948.

Precipitin Reaction for the Diagnosis of American Trypanosomiasis

Dr. Julio Muniz, head, Division of Parasitology, Oswaldo Cruz Institute, has undertaken in the past three years experimental studies designed to improve the diagnosis of American trypanosomiasis. The last report of his work stresses the practical value of the simple technic of the precipitin reaction for the diagnosis of acute and subacute forms of the disease. In his first paper Dr. Muniz had reported that in human cases of American trypanosomiasis there is a great concentration of antibodies (amboceptor, agglutinins and precipitins), with a maximum during the acute stage and a progressive and steady decline with the passage to the chronic stage. This decline coincides with a definite diminution in the number of parasites in the blood stream. A similar study in rhesus monkeys experimentally infected revealed that a variable amount of those antibodies already existed in the incubation stage of the disease. The study included 255 human cases, 22 of which still were in the acute stage. Dr. Muniz' second paper reported the use, for the first time with protozoa, of the Fuller technic for the extraction of polysaccharides from bacteria. Using culture forms of *Tripanosoma cruzi*, he was able to extract a fraction that behaved as a good precipitinogen, which had a high holding power when employed as an antigen for the complement fixation reaction.

Dr. Muniz' last paper reports the results obtained in 21 new cases of the acute form of the disease, all from the county of Bambuhy, state of Minas Geraes, in addition to the 22 previously discussed. The extraction method was described in the first report (Muniz, J., and de Freitas, G.: *Mém. Inst. Oswaldo Cruz* 41:303, 1944). In its immunologic characteristics the American trypanosomiasis greatly differs from all other human diseases caused by protozoa, since in none of them has so strong a humoral immunity ever been demonstrated as the one presented by acute cases of trypanosomiasis. In all the 33 cases studied by Muniz the precipitin reaction was positive and was still fairly strong three and four months after the onset of the acute stage. This fact is important in diagnosis, particularly when one considers that American trypanosomiasis is a parasitic disease whose acute stage can evolve without pronounced symptoms and thus be unnoticed even by the patient himself. Another relevant point is the disproportion between the small number of cases diagnosed during the acute stage and the much larger number of those identified in the chronic stage through serologic reactions. The acute cases are diagnosed as a rule by direct demonstration of the parasites in the blood stream or by tiresome methods such as culture, inoculations and the xenodiagnostic test.

As a result of his careful study, Dr. Muniz emphasizes the following advantages of the precipitin reaction: (1) simple technic; (2) long lasting and stable precipitinogen; (3) small amount of serum needed for the reaction (0.1 cc. for the reaction tube and 0.1 cc. for the control tube); (4) immediate results, since most of the serums react within one or two minutes; (5) complete specificity, because, although the *T. cruzi* precipitinogen may react with immune serums prepared in rabbit with samples of the various species of *Leishmania* (as disclosed in the author's second report), this does not occur with serums from patients with cutaneous and visceral American leishmaniasis, owing to the low concentration of antibodies; (6) useful as an index of the degree of humoral immunity, because as a rule it occurs when the agglutination power of the serum is above 1:500; (7) useful as an index of the activity of the parasite, as is the case in the acute and subacute forms of the disease, since the humoral immunity is almost always well correlated with that activity, and (8) extremely useful in epidemiologic surveys, for the easy detection of active cases.

Treatment of Leprosy

The Sociedade Paulista de Leprologia has published the results of an extensive experiment on the treatment of leprosy by diaminodiphenylsulfone derivatives ("diasone" and "promin") performed by Drs. L. Souza Lima, G. Castro Cerqueira and Renato P. Braga at the Santo Angelo and the Padre Bento leprosariums of the São Paulo State Department of Health and involving more than 1,000 patients. The criteria to appraise the results were clinical, histopathologic and bacilloscopic.

From the clinical point of view, the authors stress that these drugs are well tolerated by patients with all forms of leprosy and of all ages, so that the treatment is without danger with a minimum of precautions. At the same time these agents are extremely active in the treatment of leprosy, although it is not yet possible to affirm how far this activity goes. The most important clinical facts are the almost immediate halting of the progressive evolution of the disease, with subsequent regression of the cutaneous manifestations and rapid involution of the mucosal involvement. The efficient and rapid action of the diaminodiphenylsulfone derivatives against the specific involvement of the bucco-naso-pharyngo-laryngeal mucosae, leading to dysphonia, aphonia and respiratory difficulties necessitating emergency tracheotomy, is sufficient evidence to commend the use of these drugs. The same conclusion is expressed by the authors in reference to specific lesions of the eyes, which may lead to complete blindness. From the histopathologic point of view the most important fact is the finding of tuberculoid structures in patients with lepromatous lesions who showed exacerbation of the cutaneous symptoms at the beginning of treatment. This seems to demonstrate a systemic participation in the regression of the process and a progressive degeneration of the initial lepromatous structures toward chronic inflammatory structures without a specific character in the patients who did not show the exacerbation. The structural changes found in biopsy specimens taken in different stages of the regressive process seem to point out the probable bacteriolytic action of the diaminodiphenylsulfone drugs on *Mycobacterium leprae*, either in histologic specimens or in smears, in the distinct stages of the treatment by diaminodiphenylsulfone compounds. Moreover, subsequent disappearance of the organisms in a great number of cases offers every probable proof of a bacteriostatic action of the drugs.

The authors say that the clinical evidence, the regression of cutaneous manifestations and the bacilloscopic findings in 93 per cent of the leprosy patients subjected to the treatment indicate that these drugs are, at present, the most efficient therapeutic resources for the treatment of leprosy persons.

Normal Protein Concentration in Blood

Drs. Luis C. Fonseca, Armando V. Rotondi and Francisco J. Schmidt, of the Paulista Medical School, São Paulo, have published the results of the determination of the total and fractional protein blood concentration in 110 men. The subjects were healthy young adults from 20 to 24 years of age, subjected to a standard diet containing at least 1 Gm. of protein per kilogram of body weight, 55 per cent of the proteins being of animal origin. The two great fractions of blood proteins—the albumins and the globulins—were determined by the refractometric method after Robertson, and the sum of the two fractions was taken as the total of proteins. The variation of the protein concentration was found to be as follows: Total proteins: average 78.3 Gm. per liter, standard deviation 5.2 Gm. per liter; albumins: average 56.9 Gm., standard deviation 6.3 Gm.; globulins: average 21.3 Gm., standard deviation 3.8 Gm.; ratio albumin: globulin: average 2.8, standard deviation 0.76.

Correspondence

HEPARINEMIA IN BLOOD DYSCRASIAS

To the Editor:—The studies of Drs. J. G. Allen, L. O. Jacobson and their associates at the Argonne National Laboratory on the mechanism of the hemorrhagic phases of thrombopenia, leukemia and radiation morbidity were the subject of recent editorial comment (*THE JOURNAL*, Dec. 27, 1947, p. 1156) but neither in the editorial nor in the publications cited was there mention of the significant pioneer work of M. Volkert and E. Hertel (*Ugeskr. f. læger* 31:781-786 [Aug. 5] 1943), who demonstrated the relationship of heparinemia to the hemorrhagic phases of the malignant hematologic dyscrasias, certain human atopies and certain instances of hepatopathy. The oversight was excusable, inasmuch as wartime inaccessibility of foreign periodicals and their abstracts led to an almost complete reduplication of Volkert and Hertel's work by the group with which I was associated at Halloran General Hospital before we were aware of it. In the latest report of the Chicago investigators (Allen, J. G.; Sanderson, M.; Milham, M.; Kirschon, A., and Jacobson, L. O.: *J. Exper. Med.* 87:71-85 [Jan.] 1948) on heparinemia, they interrogate the subject noun of their title.

With the hope of casting some light on the rather intricate relationship of heparinemia to a certain type of hemorrhagic diathesis I should like to outline the synthesis of a broad concept which has been previously elaborated but which has lain fallow in official files for almost two years. Its enunciation is not only justified because of the apparent confirmation rendered to the superb studies of Allen and associates but also for the possibility of the earlier general application of their results to a broad segment of the hematologic dyscrasias. About 40 per cent of patients with acute leukemia die solely as the result of what should now be a tractable form of hemorrhage: heparinemic extravasation.

Our own studies in this field (1) confirmed the probable identity with heparin of the anticoagulant described by Volkert and Hertel as well as by Allen and co-workers; (2) indicated that the additional factor whose absence from the blood in heparinemic extravasation was implied by both groups of investigators was probably the blood cholinesterases, and (3) permitted the nosologic unification of a set of apparently etiologically diverse conditions, among which may be incorporated the acute and terminal chronic leukoses, thrombopenic purpura, aplastic and agenic anemias, anaphylaxis and radiation morbidity and some instances of "dicumarol" intoxication, all of which have the propensity for culmination in heparinemic extravasation through a common pathodynamic modulus exactly comparable to that exhibited by laboratory animals subjected to peptone shock and which we termed the "atopic-exudative" syndrome (*Science* 104: 449 [Nov. 8] 1946). The elaboration of these points is as follows:

1. Volkert and Hertel concluded that the anticoagulant found in the blood of leukemic patients and subjects with pernicious anemia or allergies, like heparin, raised the antithrombic titers of such bloods. Allen and associates found that toluidine blue restored the coagulability to thrombopenic and leukotic bloods. Our own indication of the heparin-like nature of the anticoagulant in the blood of acute leukemic patients and those with allergic or thrombopenic purpura was based on the property of the plasmas of such bloods, like heparin, to dissociate the rates of precipitation of the agglutinative, the filar and the gelatinous components of normal plasma clot. Globin or human platelet

thromboplastin was found to restore the coagulability to heparinized blood or to the blood of persons in terminal stages of acute leukemia.

2. Invariably, when heparinemic extravasation occurred in any condition other than the therapeutic administration of heparin, it was accompanied by a demonstrable drop in the blood cholinesterase, particularly the erythrocytic fraction. Estrapenia (as this diminution is termed) without heparinemia is a common finding; the converse has not been encountered by us in any case of surgical or anaphylactic shock, overwhelming infection, aplastic anemia, agranulocytosis, leukemia, thrombopenic purpura, pemphigus or radiation morbidity.

3. The last enumerated conditions have as a common feature, in addition to heparinemic extravasation propensity, that they are all attended by temporary or protracted failure of erythropoiesis with consequent failure of erythrocyte cholinesterase production; many of their clinical features resemble intoxication by the known cholinergics, acetylcholine and histamine. Whether the fall in blood cholinesterase that likewise characterizes them is an accidental concomitant of this cholinergic intoxication or, as we believe, its determinant remains to be established.

ROBERT D. BARNARD, M.D.,
Laurelton, Long Island,
New York.

INTERNATIONAL MEDICAL SCHOOL

To the Editor:—In view of the development of a United Nations World Health Organization and a World Medical Organization, is not the next logical step the establishment of an International Medical School? To export medical knowledge by training foreign students could eventually save more lives than any other form of relief and would constitute one product of Western civilization whose moral value could not be questioned. Common humanity demands that we share this part of our security much as we are sharing our food.

The few foreign students graduating from our medical schools at present amount to only a trickle compared to the world need. Colonial medicine and the Rockefeller Foundation have attacked this problem and demonstrated what can be done. Medical missionaries like Seagrave and Schweitzer have publicized the opportunities of medical service in the tropics but lack civil authority and the possibility of perpetuating their efforts. Only a larger group of well trained indigenous medical graduates can assure the development of medical centers necessary to continued modern medical practice.

Could not the American Medical Association in cooperation with the World Health Organization explore the field and consider the feasibility of developing a medical school exclusively for foreign students in one of the larger cities, preferably in a warm climate? Certainly such a project should pay off in good will to say nothing of the creation of an international market for medical supplies which apparently only the western hemisphere will have the industrial equipment to produce.

And finally, in this air age knowledge of what diseases continue to exist in other parts of the world only a few hours away by plane has become important to us. So well have our armed forces advertised Western medicine around the earth that this should be one bill of goods that could be sold to those peoples and nations who must finance the undertaking and produce the students.

MERL G. COLVIN, M.D., Williamsport, Pa.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Evidence: Testimony of Physician Based on Case History Given for Testimonial Rather Than Treatment Purposes.—The defendant was convicted in a bastardy proceeding and appealed to the Court of Appeals of Maryland.

The defendant contended that he was physically incapable of reproducing at the time of the alleged offense and argued, on appeal, that certain medical evidence offered by him had been improperly excluded. At the trial the defendant testified that he had had "a bad case" of gonorrhea about ten years prior thereto and that it had lasted about six months. He then testified that on the day of the trial he had submitted to a "sterilization examination and diagnosis" by a physician-pathologist and that he gave the physician his "full case history with respect to gonorrhea" and answered all the questions that were asked. With the exception of this testimony, there was no evidence as to what "case history" he gave the physician or what questions the physician asked him.

We think, said the court, that all questions to the physician relating to the defendant's "case history" were properly excluded. Medical testimony based on statements by "patients" who are not patients may be excluded. "It may be seen that, when attended by a physician for the purpose of treatment, there is a strong inducement for the patient to speak truly of his pains and sufferings, while it may be otherwise when medically examined for the purpose of creating evidence in his own behalf." The defendant, said the court, was not seeking treatment and cure at the time of the examination in question. In the case of a bona fide patient the physician may be better able than the patient to remember the material facts of the "case history." In the case at bar, however, said the court, the "case history" was ten years old and the defendant was examined by the physician on the day of the trial. There are many decisions, concluded the court, excluding such testimony.

Because of the exclusion of certain medical testimony not relating to the "case history," however, the judgment of conviction was reversed and the case remanded for a new trial.—*Parker v. State*, 55 A. (2d) 784 (Md., 1947).

Narcotic Violations: Statute of Limitations and Sufficiency of Evidence.—The defendant was convicted for two violations of narcotics laws. He accordingly appealed to the circuit court of appeals, eighth circuit.

The defendant was a physician practicing in a small Arkansas town of 600 to 800 inhabitants. He filled his own prescriptions and had duly paid the special tax and made the registration necessary for dispensing or administering narcotics medicinally. One of the counts on which he was found guilty charged that he had sold to persons, in quantities unknown, a specified gross amount of morphine sulfate cubes, morphine sulfate tablets and tincture of opium, not in good faith, not in the course of his professional practice and not in pursuance of the written orders of such persons on the required form. The other count charged that between certain dates the defendant, by means of forms issued by the government for that purpose, obtained certain drugs for purposes other than the use, sale or distribution by him in the conduct of a lawful business in said drugs or in the legitimate practice of his profession.

The first question for determination was whether any of the illegal sales charged in these two counts were barred by the statute of limitations. The indictment was returned on Sept. 9, 1946. It charged offenses extending from June 21, 1943 to May 10, 1945. Illegal sales of narcotics, or uses of order forms to obtain narcotics for unlawful purposes, are subject to the general three year statute of limitations provided for in the Internal Revenue Code. Each separate sale of narcotics or each separate use of an order form to obtain narcotics, unlawfully made, is a distinct offense under the statute. Such sales or

uses of order forms, though multiplied, do not constitute a continuous offense, for the narcotics act does not create the offense of engaging in the business of selling the forbidden drugs but only penalizes sales made in the absence of the qualifying requirements. We therefore think that the trial court erred, said the circuit court of appeals, in allowing the jury to consider and return a verdict on the basis of any illegal sales or any illegal uses of order forms which had occurred prior to Sept. 10, 1943, the start of the three year period.

The defendant also contended that certain other evidence was erroneously admitted. A witness from one of the largest pharmaceutical houses in the country was permitted to testify that the number of morphine tablets purchased by the average physician was from two hundred to five hundred $\frac{1}{4}$ -grain (15 mg.) tablets per year. A physician with a general country practice in a locality in Arkansas comparable to that in which defendant resided, who detailed the nature and extent of his practice, was permitted to testify to the amount of morphine tablets which it was necessary for him to purchase in his practice during the period covered by the indictment. Similar testimony by a number of other representative physicians in the state was admitted, some of whom filled their own prescriptions and some of whom did not, but all of whom sufficiently detailed the nature of their practice and the uses they made of the drug to afford the jury a fair opportunity for comparison. One of the physicians who did not fill his own prescriptions testified in effect that substantially all his prescriptions were taken to and filled by a certain druggist, and this druggist was permitted to testify to the number of the doctor's narcotic prescriptions during the period. A pharmacist from a drug store serving approximately ten thousand persons was permitted to testify that the ratio of general medical prescriptions in the store to prescriptions containing narcotics ran 9 to 1.

We think, said the court, that all this evidence was competent and of probative value. During the period covered by the indictment, the defendant was shown to have bought narcotics equivalent to a total of 45,708 $\frac{1}{4}$ -grain (15 mg.) doses of morphine sulfate, which would have enabled him to dispense or administer narcotics in that time equivalent to more than 69 $\frac{1}{4}$ -grain (15 mg.) doses of morphine sulfate per day. There was evidence that the ordinary dose of morphine sulfate was $\frac{1}{4}$ -grain (15 mg.). In the technical field involved it was proper to admit evidence from which the significance of the various figures brought out during the trial could be evaluated by the jury through practical, relevant and fair comparisons. Such evidence as is referred to in the foregoing statement has been recognized as proper in a number of narcotics cases.

Complaint was also made of other evidence admitted by the trial court. A physician was permitted to answer the following question: "In your opinion, can a reputable physician in a town of several hundred people dispense and administer in a period of twenty-three months, in the course of a bona fide practice only, as much as 35,000 $\frac{1}{4}$ -grain (15 mg.) tablets of morphine sulfate?" This question was fundamentally objectionable, said the court of appeals, as an attempt to get before the jury the fact, even though not in express terms, that in the opinion of the witness the defendant was guilty. The purpose and effect of the question was to have the physician, with his professional prestige, advise the jury that he thought a physician who ordered and used that much narcotics within the period involved was making an illegal disposition of the drugs. There was no reason to allow the witness to express his opinion on the question asked, either as a matter of lack of other proof of the fact involved or as a necessary aid in understanding such other proof, and the admission of the opinion as evidence was in the opinion of the court prejudicial.

Finally, witnesses from different wholesale drug companies, from which defendant had purchased narcotics, were permitted to testify that, if the company which the particular witness represented had received orders from the defendant for all the narcotics which he purchased, it would not have filled the orders. The question was improper, said the court. It was directed specifically to what those particular drug companies would have done in the defendant's case, not to a general trade

practice, and so merely served the purpose of pointing the finger at the defendant rather than of indicating any general fact.

Because of errors in the admission of evidence and because of the bar of the statute of limitations with reference to some of the offenses testified to, the judgment of the trial court was reversed and the case was remanded for a new trial.—*Hesson v. United States*, 161 F. (2d) 50 (1947).

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in *THE JOURNAL*, Feb. 14, page 491.

•BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination*, Montgomery, June 22-24, 1948. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery 4.

ALASKA: * *Examination*, Juneau, March 2. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARKANSAS: * *Examination*, Little Rock, June 3-4. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Electric*, Little Rock, June 3. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral*, San Francisco, June 5-6; Los Angeles, Feb. 28-29. *Written Examination*, Los Angeles, March 1-4. *Oral and Clinical Examination for Foreign Graduates*, Los Angeles, Feb. 29; San Francisco, June 6. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

COLORADO: * *Examination*, Denver, June 21-23. Final date for filing application is June 5. *Endorsement*, Denver, April 6. Final date for filing application is March 20. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver.

CONNECTICUT: * *Examination*, March 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homopathic Examination*, Derby, March 9-10. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

DISTRICT OF COLUMBIA: * *Reciprocity*, Washington, D. C., March 8. Sec., Commission on Licensure, Dr. G. C. Ruhland, 4130 E Municipal Bldg., Washington.

FLORIDA: * *Examination*, Jacksonville, June 29-30. Sec., Dr. Harold D. Van Schaick, 6675 Windsor Lane, La Gorce Island, Miami Beach 41.

INDIANA: * *Examination*, Indianapolis, June 1948. Sec., Board of Medical Registration and Examination, Dr. Paul R. Tindall, K of P Bldg., Indianapolis.

IOWA: * *Examination*, Iowa City, March 15-17. Comm., Dr. Walter L. Biering, Dept. of Health, Des Moines.

KANSAS: Kansas City, June 9-10. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: *Examination*, Louisville, June 16-18. Sec., Dr. P. E. Blackerby, 620 S. 3d St., Louisville.

MAINE: Portland, March 9-10. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.

MARYLAND: *Medical Examination*, Baltimore, June 15-18. Sec.-Treas., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homopathic Examination*, Baltimore, June 15-16. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination*, Boston, March 9-12. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413 E State House, Boston.

MISSISSIPPI: Jackson, June 1948. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: *Examination*, St. Louis, May 24-26. Final date for filing application is April 24. Exec. Sec., Mr. John A. Hailey, State Capitol Bldg., Jefferson City.

MONTANA: Helena, April 5-7. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEBRASKA: * *Examination*, Omaha, April 12-14. Dir., Mr. Oscar F. Humble, Room 1009 State Capitol Bldg., Lincoln 9.

NEVADA: Carson City, May 3. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: *Examination*, Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination*, Trenton, June 15-17. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NORTH CAROLINA: * *Endorsement*, Pinehurst, May 4. Sec., Dr. Ivan Procter, 226 Hillsboro St., Raleigh.

NORTH DAKOTA: Grand Forks, July 6-9. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OHIO: *Endorsement*, Columbus, April 6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

OKLAHOMA: * Oklahoma City, June 2-3. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: * *Endorsement*, Portland, May 7-8. Final date for filing application is April 23. Sec., Miss L. M. Conlee, 608 Failing Bldg., Portland.

RHODE ISLAND: * *Examination*, Providence, April 1-2. Chief, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Written Examination*, Columbia, June 21-23. *Endorsement*, March 1. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

UTAH: *Examination*, Salt Lake City, June, 1948. Asst. Dir., Department of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VIRGINIA: *Examination*, Richmond, June 18-19. *Endorsement*, Richmond, June 17. Sec., Dr. K. D. Graves, 306 Medical Arts Bldg., Roanoke.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau, Feb. 23-29. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: *Examination*, Tucson, March 16. Sec., Mr. Francis A. Roy, Science Hall, Univ. of Arizona, Tucson.

ARKANSAS: Little Rock, May 4. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

DISTRICT OF COLUMBIA: *Examination*, Washington, April 19-20. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington.

FLORIDA: *Examination*, June 5. Final date for filing application is May 23. Sec., Mr. M. W. Emmel, Univ. of Florida, Gainesville.

IOWA: Des Moines, April 13, July 13, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination*, Ann Arbor and Detroit, May 14-15. Sec., Miss Eloise Lefebvre, 101 N. Walnut St., Lansing 15.

MINNESOTA: *Examination*, Minneapolis, April 6-7. Sec., Dr. Raymond N. Dieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

OKLAHOMA: Oklahoma City, April 2. Sec., Dr. Frank Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination*, Portland, June 19. Sec., Basic Science Examining Committee, Mr. C. D. Byrne, Univ. of Oregon, Eugene.

SOUTH DAKOTA: *Examination*, Vermillion, June 4-5. Sec., Dr. G. M. Evans, 310 E. 15th St., Yankton.

TENNESSEE: Memphis, March 15-16. Sec., Dr. O. W. Hyman, Univ. of Tennessee, 874 Union Ave., Memphis.

WISCONSIN: *Examination*, Madison, April 3. Sec., Dr. W. H. Barber, Scott & Watson Sts., Ripon.

Medical Motion Pictures

FILM REVIEWS

Ascorbic Acid and Scurvy. 16 mm., black and white, sound, 900 feet (one reel), showing time twenty-one minutes. Prepared in 1947 by Frederick F. Tisdall, M.D., Assistant Professor of Pediatrics, Faculty of Medicine, University of Toronto, Toronto, Canada. Produced by and procurable on loan from: Mead Johnson & Company, Evansville, Ind.

This lecture film presents ascorbic acid and its relation to scurvy. It depicts the history, physical signs, symptoms, diagnosis and treatment of scurvy. Clinical photographs and roentgenograms are used to illustrate a few typical case reports.

Of particular interest and value is the discussion of charts showing the ascorbic acid content of various foods and how the ascorbic acid content is influenced by various methods of storage, handling and cooking. The narrator's voice is clear and the photography is excellent.

This film is recommended for pediatricians because of their special interest both in the subject and the author, a distinguished member of their group, to general practitioners, medical students and dietitians.

The Miracle of Living. 16 mm., black and white, sound, 1,400 feet, (one reel), showing time thirty-eight minutes. Prepared and produced in 1947 by the Medical Department, United States Army, Washington, D. C. Procurable on loan from the War Department, U. S. Army, Office of the Surgeon General, the Pentagon Building, Washington, D. C., or the Army Surgeons Headquarters in your local area.

This film drives home the fact that even experienced and sophisticated young persons may become infected with gonorrhea; that treatment of gonorrhea with penicillin may still leave the person infective, and that promiscuous sexual intercourse is still a serious hazard to normal marital happiness.

The idealism of the engaged couple regarding love, marriage and having a family is well depicted without undue sentimentality. The girl shows loyalty to her fiancé while he is overseas and such complete trust in his integrity that the observer sympathizes with her when, disillusioned, she insists on divorce.

The subject, though delicate, is skilfully handled and should be acceptable for either segregated or mixed audiences of high school age.

This film, though made for the Army, should prove to be an important addition to the health teaching films for use in high schools, colleges, public health departments and voluntary health agencies.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

American Practitioner, Philadelphia

2:143-214 (Nov.) 1947

- Diseases of Veins in Middle and Old Age. E. A. Edwards.—p. 143.
Dysenteries. H. M. Pollard and M. Block.—p. 151.
Syphilitic Cardiovascular Disease: Analysis of 59 Cases of Aortic Aneurysm and Review of Modern Concepts of Treatment. D. W. Chapman and R. H. Morgan.—p. 159.
Comments on Hypoparathyroidism and Cataract Formation. E. Jones.—p. 167.
Diagnostic Aspects of Subdural Hematoma. H. C. Voris.—p. 170.
Treatment of Lipoid Nephrosis. C. K. Kobayashi.—p. 173.
Review of Minor Epidemic of Ringworm of Scalp. F. W. Lynch and I. Fisher.—p. 179.
Ulcerative Colitis. J. D. Garvin.—p. 183.
General Care of Cardiac Patients. G. Coleman.—p. 189.
Management of Nephrotic Syndrome. G. E. Farrar Jr., C. F. Sackett and Joan H. Long.—p. 194.
Manifestations of Multiple Sclerosis. B. W. Lichtenstein.—p. 197.

Sclerosis.—According to Lichtenstein there is no question either the cause or the cure of multiple sclerosis. Five years fever therapy with typhoid-paratyphoid vaccine mechanically induced fever were in vogue. At a later date quinine sulfate was used rather extensively. Since the advent of vitamin B and particularly thiamine chloride, untold quantities have been poured into patients with multiple sclerosis. Of late the histamine and "dicumarol" treatments have become fashionable. In Lichtenstein's opinion the acute attack with excessive fatigue should be treated with rest, eradication of foci of infection and adequate diet. The prognosis in multiple sclerosis is not as grave as many believe. Some persons have two or more mild attacks and never go on to development of the advanced form of the disease. Others continue to have recurrent attacks with severe involvement of the nervous system followed by permanent defects.

Archives of Internal Medicine, Chicago

80:567-696 (Nov.) 1947

- Periarteritis Nodosa: Report of Two Cases, One with Special Reference to Sensitivity Factors. A. W. Contratto.—p. 567.
Ambulatory Management of Azotemia and Clinical Uremia. R. W. Lippman and E. C. Persike.—p. 579.
*Vascular Responses in Man to Ligation of Inferior Vena Cava. C. T. Ray and G. Burch.—p. 587.
*Thrombosis of Hepatic Veins: Budd-Chiari Syndrome. R. B. Thompson.—p. 602.
*Nitrogen and Fluid Balance in Treatment of Acute Uremia by Peritoneal Lavage: Analysis of Peritoneal Washings for Protein, Nonprotein Nitrogen and Phosphorus. S. H. Bassett, H. R. Brown Jr., E. H. Keutmann and others.—p. 616.
Excretion of Nicotinic Acid in Typhoid. K. Braun and N. Grossowicz.—p. 637.
Use of Methionine and Vitamin Supplements in Treatment of Hepatic Disease: Clinical and Laboratory Observations. D. Cayer.—p. 644.
Syphilis: Review of Recent Literature. F. W. Reynolds and J. E. Moore.—p. 655.

Ligation of Inferior Vena Cava.—Ray and Burch describe observations on 12 women in whom the inferior vena cava was ligated for pelvic thrombophlebitis. They were studied for as long as four and one-half years. After ligation of the inferior vena cava the pressure in the dorsal pedal veins was greatly elevated in all but 1 patient. A gradual fall in venous pressure occurred with time. The pressures in the antecubital veins were normal. Five of 6 patients studied had an elevated venous pressure in the superficial abdominal veins. The volume of pulse deflections in the tips of the toes was reduced immediately

after operation. Section of the sympathetic nerves resulted in a greater mean value immediately after operation. Five patients had a normal rate of water loss from the fingertips, volar surface of the forearm, pretibial area and tips of the toes in a comfortable environment, and the rate increased normally in response to a hot and humid environment. The plasma protein levels tend to be slightly higher than normal. After ligation of the inferior vena cava, tissue pressure in the pretibial areas rose. Tissue pressure tended to vary directly with the venous pressure and inversely with the degree of the edema. Clinical observations revealed normal function of the lower extremities and normal texture, temperature, color and response to sensation of the skin. The veins of the feet and legs were small; varicosities were limited to minute veins of the skin. The abdominal veins were dilated, and the blood flow was cephalad. Edema occurred in all but 2 patients and disappeared early in convalescence in all except 2, in whom the edema was present for eight months. Clinical and physiologic observations failed to reveal any detrimental effect from ligation of the inferior vena cava. The circulatory adjustments were adequate, although not all the compensatory mechanisms are clearly understood.

Thrombosis of Hepatic Veins.—Thompson reports 2 cases of thrombosis of hepatic veins and reviews 95 from the literature. In the majority of reported cases there was gross obstruction of hepatic veins, leading to engorgement and necrosis of the liver and to portal obstruction. In some instances the block occurred as a final episode in an already advanced disease which itself masked the characteristic clinical picture of the Chiari syndrome. There were cases in which the obstruction was limited to one lobe or to part of a lobe. While there is a pathologic unity which may be expressed by referring to all cases as examples of thrombosis of the hepatic veins, it is considered that descriptive separation is necessary. It is proposed that the name Chiari, or Budd-Chiari, syndrome should be retained for cases in which there is gross blockage of the hepatic veins and that cases with more limited lesions, not giving the full picture, should be referred to as cases of thrombosis of the hepatic veins. The syndrome of thrombosis of the hepatic veins may be due to a variety of disease processes. There may be a general disease, such as polycythemia, carrying a pronounced tendency to thrombosis, which in combination with a minor local lesion will cause thrombosis of the hepatic veins. Conversely, there may be a gross local lesion with a minimal general disease. The general causes of the syndrome include conditions in which there is a tendency toward thrombosis. Pain is usually the initial symptom. Ascites, hepatic and splenic enlargement, edema of the legs, jaundice and vomiting are other symptoms. In the majority of cases the disease is of short duration, in some lasting only a few days. In the smaller group the disease may last from ten to twenty-eight years. The treatment of this disease must be on the same lines as the treatment for portal cirrhosis. Of the 2 cases described in detail, the first shows the result of repeated thromboses over a long period. In the second case the thrombosis probably commenced about the ostia of the hepatic veins and spread to the cava and to the hepatic veins proper. Support for the theory of a general vascular disease was given by the renal infarct, the nature of which suggested a venous thrombosis as the cause, and by the vascular lesion in the myocardium. Diagnosis of this condition should be kept in mind in cases of obscure pain in the upper part of the abdominal area, especially when there is any evidence of hepatic damage.

Peritoneal Lavage in Acute Uremia.—According to Bassett and his associates equilibrium between crystalloids of the interstitial fluids is established rapidly when various isotonic or mildly hypertonic and hypotonic fluids are injected into the abdomen. For this reason, lavage of the peritoneum has been performed in an attempt to relieve the intoxication of uremia. Although so far only 2 survivals have been reported with this vividialysis, the authors believe that with a better selection of cases better results may be anticipated. They report the case of a woman, aged 24, in whom peritoneal irrigation was carried on continuously for twenty-one days. She had subacute

glomerulonephritis and became almost completely anuric two days before the irrigation was started. Flow of urine was not reestablished, and the patient died. The total nitrogen removed by way of the peritoneal cavity was 257.8 Gm. Of this amount, 140.8 Gm. was nonprotein nitrogen and 117 Gm. protein nitrogen. The former was fractionated into urea and ammonia nitrogen 110.3 Gm. and undetermined nitrogen 30.5 Gm. Substantial reductions in the concentration of blood nonprotein nitrogen and serum inorganic phosphorus were obtained at first, but as the patient lost edema fluid these values rose above the pretreatment levels. This is thought to have been due to a more rapid loss of water than of nonprotein nitrogen from the body, rather than to an increase in nitrogen catabolism. Bicarbonate in the plasma increased from 25 to 60 volumes per cent because of the administration of sodium lactate solution intravenously and the withdrawal of chloride in excess of base from the stomach.

Archives of Pathology, Chicago

44:445-562 (Nov.) 1947

- Traumatic Proliferations of Fibrocartilage with Ossification in Genesis of Spondylitis Deformans and Myositis Ossificans. E. F. Hirsch and J. W. Riley.—p. 445.
Neurogenesis Observed in Mixed Grawitz-Wilms Tumor. C. G. DeMuylder.—p. 451.
Tissue Changes in Fungous Disease. R. D. Baker.—p. 459.
Inclusion Disease of Infancy. B. Kalfayan.—p. 467.
Primary Melanoblastoma of Cerebellar Leptomeninges with Widespread Extracranial Metastases: Report of Case. R. M. Strong.—p. 477.
Mechanisms of Abnormal Development: II. Embryonic Development of Malformations. P. Gruenwald.—p. 495.

Canadian Medical Association Journal, Montreal

57:519-618 (Dec.) 1947

- Psychotherapy in Medical Practice. C. B. Farrar.—p. 519.
T.N.T. Sickness. W. E. Park.—p. 522.
Conduct of Trial of Labor. A. W. Anderson.—p. 527.
Diagnostic Problem in Poliomyelitis. W. C. Gibson.—p. 531.
Carcinoma of Left Colon. D. D. Campbell.—p. 537.
Renal Complications in Young Diabetics. L. J. Adams.—p. 540.
Marrow Biopsy and Its Processing for Histologic Preparations. W. Anderson and A. R. Armstrong.—p. 543.
*Congenital Cystic Disease of Lung: Familial Incidence of 4 Males in One Family. D. F. McRae.—p. 545.
*Early Postoperative Wound Disruption. K. R. Trueman.—p. 550.
Comparative Study of Ether and Spinal Anesthesia for Splenectomy. F. A. H. Wilkinson and J. F. McKeage.—p. 553.
Repair of Bone Loss and Fractures of Face and Mandible with Cancellous Bone Chips. E. W. Pickard.—p. 556.
Workmen's Compensation. D. J. Fraser.—p. 559.
Intestinal Tuberculosis. V. D. Schaffner.—p. 561.
*Miniature Chest X-Rays. F. T. Fralick, H. T. McClintock, E. P. Snider and C. A. Wicks.—p. 567.
Spontaneous Uterine Rupture. C. Bisson.—p. 583.
Antithyroid Drugs in Treatment of Hyperthyroidism. J. M. Kilgour.—p. 585.

Cystic Disease of the Lung.—McRae reports 4 cases of congenital cystic disease of the lung in three young men aged 20, 19 and 18 years, respectively, and in a boy aged 12; the 4 patients were brothers and members of a French-Canadian family of eleven children. The family history was negative. A review of the literature indicates that these 4 cases are unique in their familial incidence, in the presence of decided clubbing of fingers and toes without pulmonary sepsis and in the malignant nature of the disease, which resulted in the death of all 4 patients before adult life was reached. In all other characteristics they conform to the general picture of the alveolar type of congenital cystic disease. Diagnosis on clinical features failed in all cases, although there was no masking of the basic characteristics. The diagnosis was established on necropsy. Erroneous diagnosis of tuberculosis was made in 2 of the cases. Diagnosis of tuberculosis must be questioned unless it is confirmed by microscopic section or bacillary findings.

Postoperative Wound Disruption.—Trueman reports from the Winnipeg General Hospital 18 laparotomies requiring resuture of disrupted wounds. Six deaths could be attributed directly or indirectly to this incident. The majority of the cases represented major surgical problems. Intervention was performed on patients in whom it was impossible to obtain an optimum surgical state. The age of the patients varied from

that of an infant 3 days old to adults who were advanced in life. The time of occurrence of the incident was as early as three days and as late as thirty-nine days after the operation. Peritonitis was present in only 1 case. There can be no doubt, since most wound disruptions occur in the upper portion of the abdomen, that the strong lateral pull produced by the costal margins because of abnormal respiration and coughing is a factor. Protein deficiency is sufficiently important to justify a proper program of treatment to correct it prior to undertaking major surgical procedure. In the face of shock and malnutrition secondary closure is a formidable proposition. No patient should be treated without preliminary sedation. In certain cases where resuturing might obviously spell disaster the coaptation of the skin edges by adhesive tape is a worth while measure. Penicillin should be administered routinely for at least forty-eight hours. Decompression of the stomach should be maintained by use of a nasal catheter. Blood transfusions, plasma and parenteral amino acids may be employed to maintain the patient's nutrition and improve his healing powers. Large doses of ascorbic acid should be given.

Miniature Chest X-Rays.—According to Fralick and his co-workers, photofluorography compares favorably in sensitivity with 14 by 17 inch (35.56 by 43.18 cm.) roentgenograms for screening purposes. Routine roentgen examinations of the chest will not necessarily reveal evidence of certain nontuberculous diseases and will not forecast the subsequent development of pulmonary tuberculosis in those who are classified as negative on a single examination. In the authors' experience 2 per cent of those receiving miniature roentgenograms of the chest required further examination for possible tuberculous disease. Approximately 30 per cent of that group proved to be without demonstrable disease. The percentage recalled for further examination and to some extent the amount of "over-reading" from the miniature films will be greatest when interpretation is overcautious, when any clothing remains on the chest, when films are technically substandard and when the older age groups are being screened. Among 126,089 miniature chest x-rays taken in 1946 by the Gage Institute Chest Clinic in Toronto, 0.91 per cent disclosed tuberculous disease (0.11 per cent active) as confirmed by clinical examination; 0.61 per cent exhibited evidence of significant nontuberculous diseases or abnormalities; 1.9 per cent manifested less significant abnormalities such as previous pleurisy or pulmonary calcifications; 96.4 per cent showed no demonstrable disease. As long as this method continues to disclose a significant number of persons with asymptomatic active and inactive pulmonary tuberculosis, its adoption and the examination of contacts so revealed will constitute a useful addition to the already existing facilities for the control of tuberculosis.

Diseases of Chest, Chicago

13:583-750 (Nov.-Dec.) 1947. Partial Index

- *Multiple Segmental Resection in Treatment of Bronchiectasis. R. H. Overholt, R. H. Betts and F. M. Woods.—p. 583.
Noxious Gases and Bronchiectasis. D. Carr, W. E. Denman and E. F. Skinner.—p. 596.
Transitory Pulmonary Infiltration (Loeffler's Syndrome). T. L. Squier.—p. 609.
Thoracoscopy and Pneumonolysis. J. D. Murphy.—p. 631.
Unilobar Tuberculosis Treated by Lobectomy. R. D. Duncan and W. W. Carpenter.—p. 636.
Treatment of Recurrent Spontaneous Pneumothorax with Gomenol. L. H. Hetherington and G. E. Spencer.—p. 652.
Observations on Cystic and Bullous Emphysema of Lungs: Study of 100 Cases. E. Korol.—p. 669.
Treatment of Complications Arising in Course of Pneumothorax Therapy of Pulmonary Tuberculosis. M. R. Gibbons Jr.—p. 673.
Dihydrostreptomycin in Experimental Tuberculosis: Preliminary Report. B. L. Freedlander and F. A. French.—p. 708.

Multiple Segmental Resection.—Overholt and his co-workers performed 53 segmental resections in 39 patients with bronchiectasis. There was 1 fatal case, but the death was not related to the type of resection performed. Bronchiectasis is usually segmental rather than lobar. Surgical treatment should remove all the involved segments without sacrificing any normal pulmonary tissue. Refinements and advances in diagnosis, localization and surgical treatment now make such a goal attainable. All the authors' patients had at least two segments, or a lobe and a segment, excised under procaine anesthesia

with endotracheal intubation under cocaine topical anesthesia and with the patient in the face-down position to obviate the risk of contralateral flow of secretions during intervention. An uneventful postoperative course is largely dependent on the maintenance of a free airway and prompt, complete pulmonary expansion. Bilateral operations have been completed in 14 of 26 patients with bilateral bronchiectasis. As a group they are strikingly better than the patients with bilateral disease treated by bilobar or trilobar resection. Segmental resection is especially applicable to patients with multilobular involvement in whom conservation of all normal pulmonary tissue is essential.

Florida Medical Association Journal, Jacksonville

34:244-306 (Nov.) 1947

- Wounds of Colon and Rectum. C. F. Chunn.—p. 269.
Newer Services of State Laboratories. A. V. Hardy.—p. 276.
Mental Repercussion in Physical Disease. A. S. Anderson.—p. 289.

34:312-362 (Dec.) 1947

- Clinical Value of Gastroscopy. H. P. Hampton.—p. 312.
Significance of Quantitative Serologic Tests as Guide in Penicillin-Treated Syphilis. R. F. Sondag.—p. 332.
Surgical Relief of Pain. J. G. Lyerly.—p. 339.
Cancer of Breast: Study of 100 Cases at Duval County Hospital. A. T. Kennedy and E. Jelks.—p. 343.
Diagnosis of Endobronchial Tuberculosis. N. M. Levin.—p. 346.

Georgia Medical Association Journal, Atlanta

36:385-422 (Oct.) 1947

- Carcinoma of Cervix. J. E. Scarborough.—p. 385.
Arrhenoblastoma. C. J. Roper.—p. 393.
Excision of Cudlesac of Douglas for Surgical Cure of Hernias Through Female Caudal Wall, Including Prolapse of Uterus. R. Torpin.—p. 396.
Report of an Unusual Case of Foreign Body. H. C. Frech.—p. 406.
Sterility in the Male. C. L. Prince.—p. 408.

36:423-460 (Nov.) 1947

- Paroxysmal Hemoglobinuria: Report of Case. W. G. Elliott.—p. 423.
*Perineal Prostatectomy; Hope for Cancer Cure. W. E. Goodyear.—p. 425.
Urologic Conditions in Children. H. P. McDonald.—p. 428.
Hydronephrosis. S. A. Kirkland.—p. 433.
Marked Enlargement of Heart with Multiple Cardiac Deformities: Report of Case. S. B. Carter.—p. 438.
Sympathectomy in Peripheral Arterial Disease and Injury. C. Jennings.—p. 440.

Perineal Prostatectomy for Cancer.—Goodyear thinks that the perineal approach to the prostate has been unjustly neglected. He believes that the great fear of incontinence and fistulas is without foundation. It is the only method by which carcinoma of the prostate can be removed. Studies show a 15 per cent incidence of carcinoma of the prostate in men above the age of 45. It occurs both with and without hyperplasia, and the importance of rectal examination in men of this age group cannot be overemphasized. The perineal operation is the most direct approach to the prostate. The operation entails little shock and is well tolerated. Mortality statistics are uniformly lower than in suprapubic operations. Postoperative drainage is excellent, lowering morbidity by prevention of sepsis from stasis. The wounds heal by primary union. Confinement in bed, the period of catheter drainage and the hospital stay are materially shortened. Analysis of the functional results of perineal prostatectomy reveals that they compare favorably with suprapubic and transurethral operations. Actually the three cannot be too strictly compared, for their indications are so different that they cannot be rationally applied to all types of cases. Perineal prostatectomy is the method of choice not only in cancer of the prostate but also in many benign conditions such as hyperplasia, calculosis and fibrosis.

Iowa State Medical Society Journal, Des Moines

37:525-572 (Dec.) 1947

- Principles Governing Choice and Parenteral Administration of Fluids. A. F. Hartmann.—p. 525.
Infantile Cortical Hyperostoses. Charlotte Fisk.—p. 529.
Propyl Thiouracil in Treatment of Hyperthyroidism. E. T. Scales.—p. 532.
One Stage Resection of Sigmoid Colon with Primary End-to-End Anastomosis for Malignancy: Case Report. L. C. Hallendorf.—p. 534.
Recent Advances in Ophthalmology. J. E. Reeder Jr.—p. 538.

Journal of Allergy, St. Louis

18:359-438 (Nov.) 1947

- Factors Influencing Reagin Formation in Experimental Human Sensitization to Ascaris Lumbricoides Antigen: I. Influence of Chronic Infection (Tuberculosis) on Rate of Sensitization. A. G. Davidson, Bessie Baron and M. Walzer.—p. 359.
Id.: II. Influence of Sex as Factor in Rate of Sensitization. Eloise W. Kailin, A. G. Davidson and M. Walzer.—p. 369.
Id.: III. Influence of Race as Factor in Rate of Sensitization with Further Observations on Sex Factor. Eloise W. Kailin, A. G. Davidson and M. Walzer.—p. 373.
Sulfadiazine Sensitivity: Unusual Case with Successful Passive Transfer. A. L. Whittemore Jr. and P. F. deGara.—p. 382.
*Clinical Studies with Pyribenzamine (N'Pyridyl-N'Benzy-N-Dimethylethylenediamine) in Hay Fever. A. M. Fuchs, P. M. Schulman and Margaret B. Strauss.—p. 385.
*Studies of Autonomic Nervous System in "Atopic" Individuals: I. Palmar Sweating in Allergic Patients: Cholinergic Phenomenon. S. Cohen and H. L. Wolf.—p. 391.
*Failure of Benadryl and Pyribenzamine in Experimental Skin Sensitization to Penicillin and Horse Serum. R. H. Dreisbach.—p. 397.
Prophylactic Effect of Benadryl on Experimental Histamine Headache. E. G. Goodman and R. W. Coonrad.—p. 402.
Eczematoid Dermatitis Following Ingestion of "Pyribenzamine Hydrochloride" N.N.R. Tablets. M. C. Harris and N. Shure.—p. 408.
Fatal Case of Bronchial Asthma Complicated by Mediastinal and Subcutaneous Emphysema. H. Peterson.—p. 413.
Unusual Side Reaction of Hysteria from Benadryl. L. Sternberg.—p. 417.

"Pyribenzamine" in Hay Fever.—Fuchs and his co-workers treated 112 patients who had hay fever with injections of ragweed pollen extract to one group of 40 patients; twenty-one tablets a week of 50 mg. of tripeleannamine hydrochloride ("pyribenzamine hydrochloride" N.N.R.), one tablet after each meal three times a day, to a second group of 40 patients, and one 50 mg. tablet of tripeleannamine twenty minutes before all ragweed pollen extract injections to a third group of 32 patients. The results following treatment of each group were tabulated on the basis of the percentage of treated patients who manifested certain symptoms for a forty-two day period from August 10 to September 20. No significant difference was noted in the percentage of patients who experienced no or slight symptoms of hay fever in the three groups. An estimation of the percentage of patients who had moderate or severe symptoms showed that those who took tripeleannamine alone had slightly more symptoms of hay fever than those in the other two groups. The temporary symptomatic relief given by the drug was proportionate to the dosage prescribed. Tripeleannamine does not immunize or protect the patient with hay fever from the effects of the antigen-antibody reaction for any length of time. The mode of action of the drug is still unknown. There is no definite proof that all allergic manifestations are the result of histamine activity. Administration of the drug prior to the injection of pollen extract made possible greater increases in the dosage of the pollen extract, and the patients were able to reach a maximum dosage almost double the amount they usually tolerated when taking the pollen extract alone. "Pyribenzamine" is a valuable drug for the symptomatic relief of hay fever symptoms.

Autonomic Nervous System.—Cohen and Wolf compared the incidence of increased palmar sweating in 63 patients with allergic respiratory disease with that of 63 psychoneurotic patients in order to assess the psychiatric factor in palmar sweating. They compared the incidence of palmar sweating in the allergic patients with that in 99 syphilitic patients because the latter presented an analogous situation in the clinic to the first, with both groups anticipating parenteral medication. All patients were between the ages of 15 and 65 years. The patients with allergic respiratory disease manifested a statistically significant increase in the incidence of intense palmar sweating as determined by the Silverman technic over the patients with psychoneurosis and syphilis. Race, sex and age are without influence on intense palmar sweating. The difference in incidence between the allergic and nonallergic groups is due to factors associated with the clinically manifest allergic state and are not sampling errors. Sweat glands are supplied by fibers of the sympathetic nervous system, but functionally they are cholinergic. Palmar sweating bears no relation to water loss from other parts of the skin or respiratory tract.

It is suggested that clinically manifest allergic respiratory disease in man is dependent on an inherent behavior pattern of the autonomic nervous system in addition to the immunologic factor of hypersensitivity.

"Benadryl" and "Pyribenzamine" in Reactions to Penicillin.—Dreishach's animal experiments showed that repeated optimum daily doses of diphenhydramine ("benadryl") or tripeleminamine ("pyribenzamine") given subcutaneously were ineffective in preventing the development of the Arthus type of skin sensitivity reactions to penicillin or horse serum in rabbits. Diphenhydramine or tripeleminamine mixed with penicillin and injected subcutaneously likewise did not prevent the sensitivity reactions. However, either of the drugs mixed with histamine prevented the typical skin reactions of histamine in scratch tests on rabbit and human skins. The negative objective experimental results obtained with these antihistaminic agents suggest that the nature of relief with these agents in clinical reactions to penicillin, and possible other allergic reactions, is also not objective but essentially subjective and presumably related to the central and peripheral sensory depression of these agents.

Journal of Clinical Investigation, Boston

26:1049-1222 (Nov.) 1947

- Effect of Fatal P. Knowlesi Malaria on Simian Circulatory and Body Fluid Compartment Physiology. R. R. Overman and H. A. Feldman.—p. 1049.
- Occurrence of Jaundice in Therapeutic and Natural Malaria. T. C. Chalmers Jr.—p. 1055.
- *Mechanism and Significance of Thymol Turbidity Test for Liver Disease. H. G. Kunkel and C. L. Hoagland.—p. 1060.
- *Effects of Temporary Cessation of Renal Blood Flow in Rat. S. Koletsky and G. E. Gustafson.—p. 1072.
- *Serologic Response to Intranasal Administration of Inactive Influenza Virus in Children. J. J. Quilligan Jr. and T. Francis Jr.—p. 1079.
- Volume of Distribution of Mannitol as Measure of Volume of Extracellular Fluid, with Study of Mannitol Method. J. R. Elkinton.—p. 1088.
- Effects of Experimental Hypertonia on Circulating Leukocytes. J. L. Tullis.—p. 1098.
- Relationship of Sodium Chloride to Hypertension. G. A. Perera and D. W. Blood.—p. 1109.
- Capillary Permeability in Relation to Acute Anoxia and to Venous Oxygen Saturation. J. Henry, J. Goodman and J. Meehan, with technical assistance of R. Frankel.—p. 1119.
- Hepatic Blood Flow and Splanchnic Oxygen Consumption of Man—Their Estimation from Urea Production or Bromsulphalein Excretion During Catheterization of Hepatic Veins. J. D. Myers.—p. 1130.
- Urinary Excretion of Radioiodine in Various Thyroid States. F. R. Keating Jr., M. H. Power, J. Berkson and S. F. Haines.—p. 1138.
- Studies on Pain: Discrimination of Differences in Intensity of Pain Stimulus as Basis of Scale of Pain Intensity. J. D. Hardy, H. G. Wolf and Helen Goodell.—p. 1152.
- Effect of Urine Volume on Urea Excretion. D. D. Van Slyke.—p. 1159.
- Influence of Orally Administered Alkali and Acid on Renal Excretion of Quinacrine, Chloroquine and Sautoquine. J. W. Jailer, M. Rosenfeld and J. A. Shannon.—p. 1168.

Thymol Turbidity Test in Liver Disease.—Experiments by Kunkel and Hoagland with serums selected from a group of 200 patients with infectious hepatitis admitted to the outpatient department of the Hospital of the Rockefeller Institute demonstrated that the turbidity produced by the thymol reagent of Maclagan in these serums depends on the presence both of lipids and of abnormal lipid protein complexes migrating in the beta globulin fraction of the serum. The gamma globulin fraction of serum also plays an important role in the reaction. The relative importance of the different components in the reaction varies with different serums. Development of turbidity is prevented if the lipids are kept in solution by the addition of a "tween" or are extracted with ether, or if the gamma globulin is removed. In lipemic serums the thymol reagent causes a nonspecific increase in the turbidity due to increase in particle size of the lipid globules. Correction for this effect can be made by using a photometric blank prepared from serum and a thymol reagent containing such a high buffer concentration that precipitation of the globulin component is prevented. Immunologic experiments on rabbits did not reveal evidence that the protein concerned in the reaction was abnormal. In patients with acute infectious hepatitis values for the thymol turbidity test were found to parallel alterations in serum lipids initially and alterations in gamma globulin during late convalescence.

Temporary Cessation of Renal Blood Flow.—Koletsky and Gustafson produced complete renal ischemia in white male rats under anesthesia with intraperitoneal sodium pentobarbital by occluding the renal artery and vein with clamps for thirty minutes, one hour, ninety minutes and two hours. The animals survived the thirty minute period and usually the one hour period. The mortality at ninety minutes was 73 per cent, and at two hours the procedure was uniformly fatal. After circulation was restored by removal of the clamps, the blood urea nitrogen level rose rapidly until death, or reached a maximum level and then declined with survival of the animal. The principal morphologic change was necrosis of the descending segments of the proximal convoluted tubules. The renal lesion was not similar to that observed in human or experimental crush syndrome or in rats with fatal tourniquet shock.

Intranasal Inactive Influenza Virus.—Quilligan and Francis administered intranasal sprays of equal parts of type A and type B influenza virus, inactivated with solution of formaldehyde and diluted (1:5) in isotonic sodium chloride solution, to 40 of 80 boys between the ages of 8 to 14 years at the Wayne County Training School in Northville, Mich. Twenty boys were given a 1:40 dilution subcutaneously, and the remaining 20 boys received 1 intranasal inhalation of sterile normal fluid. An additional 70 boys were not vaccinated and did not receive any control fluid. A single intranasal inhalation of the inactivated influenza virus preparation resulted in good antibody responses, and the use of five daily sprays gave slightly higher levels of antibody. A comparison of the effect of the two different doses of intranasal vaccine on the serums taken five months after vaccination suggests that the larger dose gave a more persistent elevation in antibody titer. The vaccine given intranasally on five successive days contained approximately eight times as much inactive virus preparation as the subcutaneous material. Comparison of the antibody responses indicates that subcutaneously administered vaccine gives higher and more persistent levels with smaller doses. Clinical observations were made during an epidemic of influenza B in the institution in December 1945 after the vaccination performed in October 1945. Eight of 58 children in the three vaccinated groups developed clinical evidence of disease. In 29 of the 89 unvaccinated children there developed clinical evidence of influenza, including 4 children from the inhalation control group. No significant evaluation of the effects of administration of the virus materials on the incidence of infection with influenza could be made.

Journal of Gerontology, Springfield, Ill.

2:277-366 (Oct.) 1947

- Broader Implications of Aging. E. V. Cowdry.—p. 277.
- Factors Contributing to Mental Disease in the Aged. E. J. Stieglitz.—p. 283.
- Glycine Creatine Metabolism in Its Relationship to Aging. K. Stern and Brigitte A. Askonas.—p. 296.
- *Relation of Nutritional Deficiency to Impaired Libido and Potency in Male. M. S. Biskind.—p. 303.
- Effect of Age on Carbohydrate Metabolism of Tissue Homogenates. J. M. Reiner.—p. 315.
- General Physiology of Aging: A Review. A. I. Lansing.—p. 327.

Nutritional Deficiency and Hypogonadism.—Biskind shows that impaired hepatic function on a nutritional basis leads to alteration of the estrogen-androgen equilibrium, owing to failure of the liver to inactivate estrogen in deficiency of the B vitamins, while it continues to inactivate androgen. The author found that of 143 patients with nutritional deficiency, ranging in age from 29 to 61, impairment of libido and potency of which the patient was aware occurred in 96. The incidence of this disorder in B avitaminosis is probably higher. Testicular atrophy occurred in 67. Glossitis, hepatomegaly and testicular atrophy appeared simultaneously in 58. Of 76 patients who were followed subsequently, nutritional therapy alone led to subsidence of the avitaminotic lesions and definite improvement in libido and potency in 62. Psychogenic factors were undoubtedly operative in several of the failures. The frequent association of lesions of nutritional deficiency, especially glossitis, with hepatomegaly and testicular atrophy suggests that the presence of any one of these lesions should lead to search for the others.

The author stresses the multiplicity of deficiencies and states that desiccated liver, being unfractionated, provides probably the best available source of the as yet unidentified factors essential to nutrition, although some slight losses probably occur from drying and oxidation. It must be given in relatively large doses to be effective. All the products are given in divided doses after meals. A number of severely deficient patients require parenteral therapy in addition.

Journal of Lab. and Clinical Medicine, St. Louis

32:1293-1436 (Nov.) 1947

- Experimental Chemotherapy of Filariasis. R. I. Hewitt, W. S. Wallace, E. White and Y. Subbarow.—p. 1293.
Studies in Erythroblastosis Fetalis. E. Witebsky, M. I. Rubin and Livla Blum.—p. 1330.
Urinary Excretion of Pteroylglutamic Acid and Certain Related Compounds. T. H. Jukes, A. L. Franklin, E. L. R. Stokstad and J. W. Boehne.—p. 1350.
Anomalous Findings in Penicillin Level Determinations in Urine. Carolyn R. Falk and Helen Blech.—p. 1356.
Antibacterial Activity of Some Sulfon- and Sulfanilamide Derivatives. G. R. Goetchius and C. A. Lawrence.—p. 1361.
Effect of 2,3-Dimercaptopropanol (BAL) on Toxicity of Gold. S. Levey and C. J. Smyth.—p. 1364.
Histamine Antagonists: VIII. N-(alpha-Pyridyl)-N-(alpha-Thienyl)-N', N'-Dimethylethylenediamine, New Antihistaminic Compound. Experimental and Clinical Experiences. S. M. Feinberg and T. B. Bernstein.—p. 1370.
Effect of Alkaloids on Acetylcholine and Potassium Sensitivity of Striated Muscle. Clara Torda and H. G. Wolff.—p. 1374.

Journal-Lancet, Minneapolis

67:355-392 (Oct.) 1947

- Pathologic Survey of Appendix. A. M. Harris.—p. 355.
Continuous Follow-up Study of 500 Arthritides. H. A. Nissen.—p. 358.
Long Unrecognized Foreign Bodies in Air and Food Passages: Report of 2 Cases. P. G. Bunker.—p. 362.

67:393-426 (Nov.) 1947

- Indications for Bone Graft Fracture Treatment. R. E. Van Demark.—p. 393.
Cooper's Ligament Herniotomy. V. G. Borland and J. H. Graham.—p. 397.
Megaloblastic Anemia in Infants. R. A. Aldrich and E. N. Nelson.—p. 399.
Combined Effect of Streptomycin and para-Aminosalicylic Acid on Experimental Tuberculosis in Mice. G. P. Youmans, Anne S. Youmans and R. R. Osborne.—p. 403.
Glycerite of Hydrogen Peroxide: II. Comparison of its Bacteriotoxic Action with That of Solutions Containing Iodine. E. A. Brown, W. B. Krabek and Rita S. Skillington.—p. 405.
Health Service in College Program. R. I. Canuteson.—p. 409.
General Practitioner in His Community. W. A. Wright.—p. 411.
Hyperparathyroidism. L. J. Peterson.—p. 414.

Journal of Neurosurgery, Springfield, Ill.

4:483-554 (Nov.) 1947

- Studies on Spinal Cord Injuries: II. Nature and Treatment of Pain. L. Davis and J. Martin.—p. 483.
Two-Stage Autograft for Repair of Extensive Median and Ulnar Nerve Defects. C. H. Shelden, R. H. Pudenz and C. S. MacCarty.—p. 492.
Use of Smear Technic in Rapid Histologic Diagnosis of Tumors of Central Nervous System: Description of a New Staining Method. A. A. Morris.—p. 497.
Use of Polythene Film as a Dural Substitute: Preliminary Report. M. H. Brown, J. H. Grindlay and W. McK. Craig.—p. 505.
Central Nervous System Resistance: III. Effect of Adrenal Cortical Substances on Central Nervous System. R. G. Grenell and E. L. McCawley.—p. 508.
Use of Gelatin Sponge in Prevention and Treatment of Cerebrospinal Rhinorrhea. R. B. Cloward and E. B. Cunningham.—p. 519.
*Report of Early Results in Tantalum Cranioplasty. S. Lane and J. E. Webster.—p. 526.
Extradural Arachnoidal Cysts of Traumatic Origin. H. S. Swanson and E. F. Fincher.—p. 530.

Results in Tantalum Cranioplasty.—A survey by questionnaire of veterans' hospitals revealed that a total of 49 tantalum plates were removed. In an additional 7 cases associated abscesses or collections of exudate under the scalp were treated by aspiration or drainage, and removal of the plate was not required. The factor common to practically every case in which the plate was removed was the presence of persistent infection, associated in some cases with osteomyelitis involving the bone edge. The infection was usually a delayed reaction occurring from four to twenty-two months after the insertion

of the plate. Three additional plates have been removed at the veterans' hospital at Dearborn, Mich. When infection of the cranioplasty has occurred, conservative measures have always failed. A continuing recurrence of infection has finally required removal of the plate.

Journal of Pediatrics, St. Louis

31:485-598 (Nov.) 1947

- Blood Volume in Congenital Heart Disease. D. E. Cassels and Minerva Morse.—p. 485.
Comparative Absorption, Excretion and Storage of Oily and Aqueous Preparations of Vitamin A. J. M. Lewis, O. Bodansky, J. Birmingham and S. Q. Coblentz.—p. 496.
*Febrile Convulsions: Clinical Study with Special Reference to Heredity and Prognosis. S. Livingston, E. M. Bridge and L. Kajdi.—p. 509.
*Clinical Picture of Mumps Meningoencephalitis and Report of Case Without Parotitis. W. R. Eberlein and C. P. Lynxwiler.—p. 513.
Friedländer's Pneumonia in Infancy. B. W. Miller, H. W. Orris and H. H. Taus.—p. 521.
*Premature Closure of Cranial Sutures. D. R. Simmons and W. T. Peyton.—p. 528.
Phthalylsulfathiazole in Treatment of Diarrhea in Children. M. L. Blatt, E. B. Plattner, M. Levine and F. Melzer.—p. 548.
Pertussis-Parapertussis Vaccine. A. C. Rambar, Katherine Howell and E. J. Denenholz.—p. 556.
*Allergy as Causative Factor of Fatigue, Irritability and Behavior Problems of Children. T. G. Randolph.—p. 560.

Febrile Convulsions.—Livingston and his co-workers studied 94 patients, each of whose first convulsion in childhood was associated with an acute febrile illness. In 18 of the 94 patients not only the initial but each subsequent convulsion was accompanied by fever; all 18 patients recovered. Seventy-six patients had both febrile and afebrile convulsions, and only 28 of them recovered. The earliest age of cessation of febrile convulsions in this series was 3½ years; the latest age was 8 years. The earliest age of onset was 3 months; the latest 8½ years. Age of onset, sex, race and form of anticonvulsive treatment did not seem to influence the final outcome. The prognosis for recovery in patients whose convulsions were invariably associated with fever was good. The prognosis was better for those patients who had fewer recurrent attacks. Focal convulsions carried more serious prognostic importance than generalized convulsions. There is a relatively less favorable prognosis for a convulsive child whose close relatives have suffered from chronic epilepsy, whereas the outcome is better if only childhood convulsions have occurred in close relatives. It is suggested that there may be a significant difference between the hereditary factors which predispose to chronic epilepsy and those which predispose to childhood convulsions. Patients with a negative family history showed less tendency to recover than those with a family history of childhood convulsions.

Mumps Meningoencephalitis.—Eberlein and Lynxwiler describe the clinical picture of mumps meningoencephalitis based on 280 cases from the literature. Two hundred and sixty-six (95 per cent) of the patients complained of headache, usually frontal. Approximately 80 per cent had nausea and vomiting. If the patient was a child, the parents often remarked that he had been lethargic or the somnolence was noted later in the disease. Thirty-one patients (11 per cent) had convulsions and 48 (17 per cent) were disoriented and unable to give a history. The patients were running a temperature, usually between 100 and 102 F. There were variable degrees of meningeal irritation and nuchal rigidity or abnormal reflexes such as positive Kernig or Babinsky signs. All of these, like the parotitis, may be absent at first only to appear later in the disease. In all except 33 of the cases the diagnosis was based on the typical clinical picture appearing either during an epidemic of mumps or in persons with a definite history of exposure to mumps. In 1 case of mumps meningoencephalitis without parotitis in a boy aged 9 there was no epidemic or history of exposure to mumps to suggest the true diagnosis. The patient's sister, aged 10, was admitted to the hospital ten days later with a dull pain beneath the lobe of the left ear and with a temperature of 101.6 F. The fever lasted four days, after which she had no symptoms. Both the boy and his sister, five to six weeks after their recovery, had high complement fixation titers for the mumps virus. Fifteen days after the onset of the boy's illness the mother of

these 2 children, who nursed the boy throughout his illness, had a full-blown bilateral parotitis. It is suggested that meningo-encephalitis without parotitis is infectious and that complement fixation test may be the only way to establish the diagnosis.

Premature Closure of Cranial Sutures.—Simmons and Peyton operated on 5 patients with craniostenosis, 3 male children between the ages of 8 months and 3½ years and 2 women aged 28 and 29 years, respectively. Craniostenosis is an anomaly in which the sutures of the skull close prematurely, causing compression of the intracranial contents. Microcephaly gives most difficulty in the differential diagnosis of craniostenosis. In the large majority of cases it should be possible to distinguish between these two conditions at an early age. Mental retardation, one of the earliest symptoms of craniostenosis, is the most important indication for surgical intervention and one which has received little emphasis in the past. It is impossible to repair damage which has already occurred to the brain, but further damage may be prevented by early craniectomy. Blindness is one of the commonest symptoms, and surgical intervention should be performed at the first indication of failing vision. Occasionally surgery may be necessary for the relief of severe and persistent headaches which may be associated with the disease. Because the bones of the skull in infants are thin and flexible, linear craniectomy will allow for adequate expansion of the brain and will allow the head to assume a normal shape. After linear craniectomy the bone tends to form bridges across the artificial suture lines and to arrest expansion; this is probably one of the reasons for poor results following surgical intervention in these cases. Tantalum foil interposed between the bone edges should prevent this regeneration and should allow continued expansion of the skull without additional operations. This method was employed in 2 of the authors' patients aged less than 1 year. One year after operation psychometric testing revealed that one of these patients had an intelligence quotient of 100, and he seemed in every way to be a normal child.

Fatigue of Allergic Origin in Behavior Problems.—According to Randolph, the fatigue syndrome of allergic origin is a common cause of irritability and abnormalities of behavior in children. It usually results from chronic food allergy involving sensitivity to more than one food. Although any food ingested in often repeated feedings may be the cause of such chronic symptoms, sensitivity to wheat and corn is encountered most frequently. Clinically these cases fall into two groups: the first and larger group, as illustrated by 3 cases in boys 8 and 9 years of age, is characterized by the chronically tired, sluggish and depressed child. The second group, of which 1 case is reported in a boy 8 years old, is typified by the hyperkinetic, excitable child. The children in both groups are inclined to be irritable and fretful in their behavior and to be maladjusted in both the home and school. Their schoolwork suffers because of a characteristic difficulty in concentration and impairment of memory. Although this clinical picture may be the sole allergic manifestation exhibited by a child, it is more commonly associated with a history of one or more other expressions of clinical allergy. These children are most commonly considered nervous, a point of view that is not helpful in their treatment. When dealing with allergic children, the significance of psychic and emotional factors in the genesis of irritability and behavior problems may be judged to best advantage after the allergic reactions are brought under control.

Michigan State Medical Society Journal, Lansing

46:1226-1352 (Nov.) 1947

- Michigan Rural Health Conference. J. S. DeTar.—p. 1273.
Widespread Metastatic Carcinoma: Case Study. L. L. Kazdan.—p. 1276.
Prolapse of Umbilical Cord. L. E. Doerr Jr.—p. 1277.
Prostatic Surgery: Review of 100 Consecutive Cases. R. J. Hubbell and R. N. Kilgore.—p. 1279.
Medical Treatment of Perforated Peptic Ulcer: Report of Case. R. S. McClintock.—p. 1282.
Combined Jaw Resection and Neck Dissection. H. C. Saltzstein and W. Johnson.—p. 1285.

Medical Treatment of Perforated Peptic Ulcer.—McClintock says that it is the practice in the Baltimore Marine Hospital to treat all patients with ruptured peptic ulcer by conservative measures. Only 1 death occurred in 35 cases so

treated. The case reported is of interest because there developed in the patient and was maintained for many weeks a large, asymptomatic, localized abscess of the peritoneum, apparently caused by spilled gastric juice. In spite of the fact that the general condition of this patient was poor, he recovered completely with conservative treatment.

Military Surgeon, Washington, D. C.

101:361-466 (Nov.) 1947. Partial Index

- Dental Service in the Postwar Army. T. L. Smith.—p. 376.
Dental Service in Veterans Administration. M. M. Fowler, E. M. Kennedy, C. A. Toline and L. D. Heacock.—p. 378.
Plastic Artificial Eye and Restorations Program, Veterans Administration. R. E. Stewart.—p. 396.
General Hospital Dental Service. O. P. Snyder.—p. 410.
Discussion of Dental Service in Theater of Operations and Suggested Changes. L. H. Turay.—p. 414.
Maxillary Fractures. H. A. Brayshaw.—p. 436.

Missouri State Medical Assn. Journal, St. Louis

44:788-864 (Nov.) 1947

- Chemotherapy in Surgery. W. A. Altmeier.—p. 803.
Chemotherapy in Medical Conditions. D. R. Nichols.—p. 809.
Medical Care of the Veteran. R. M. Zollinger.—p. 813.
Development of Veterans Administration Residency Training Program. T. E. Walton.—p. 824.

41:865-936 (Dec.) 1947

SYMPOSIUM ON POLIOMYELITIS:

- Analysis of 100 Cases of Poliomyelitis. A. Jones and F. D. Dickson.—p. 881.
Speculative High Points on Cause, Immunity and Pathology of Poliomyelitis. F. C. Helwig.—p. 882.
Diagnosis and Treatment of Poliomyelitis. R. J. Blattner.—p. 886.
Treatment of Poliomyelitis in Recovery and Residual Phases. H. R. McCarroll.—p. 888.
Criteria for Diagnosis of Psychosomatic Symptoms. G. Saslow.—p. 894.
Post-rheumatic Arthralgia. M. B. Roche.—p. 896.
Lawyer's Comments on Medical Testimony in Medicolegal Cases. J. G. Madden.—p. 900.
Congenital Absence of Vagina: Treatment and Aftercare: Report of Case. R. J. Crossen.—p. 903.

New England Journal of Medicine, Boston

237:683-718 (Nov. 6) 1947

- *Aerosol Therapy of Respiratory Disease: Report of 50 Cases. V. Bryson and E. J. Grace.—p. 683.
Services Offered to Physician by Massachusetts Department of Public Health. V. A. Getting.—p. 693.
Carcinoma of Colon and Rectum. J. W. Jameson and C. R. Mullins.—p. 699.
Tuberculosis in the Aged: Report of Case. D. C. Ditmore.—p. 702.
"Folic Acid": Pteroylglutamic Acid and Related Substances. F. Sargent.—p. 703.
Carcinoids of Ileum, with Metastasis to Mesenteric Lymph Nodes. Volvulus of Ileum.—p. 708.
Chronic Pulmonary Tuberculosis.—p. 709.

Aerosol Therapy of Respiratory Disease.—Bryson and Grace say that experimental evidence indicates that to penetrate to the smaller bronchioles and alveoli of the lungs, aerosols must be composed of small particles of 5 microns in diameter or less. Large particles are undesirable, except for the treatment of infectious tracheitis, laryngitis and other diseases of the larger respiratory passages. The clinician must distinguish between the ordinary commercial atomizer, which produces relatively large droplets, and the nebulizer, which is constructed with some intermediate baffle to break larger particles into smaller droplets. If it is desired to confine therapy predominantly to the bronchioles and alveoles, the clinician should ascertain that the nebulizer produces with 5 per cent glycerin a fine smoke that floats in the air, rather than a spray capable of wetting objects placed a few inches from the orifice. Aerosol therapy is a form of topical treatment. Topical administration of antibiotics in detergent solutions may provide the physical advantages associated with reduced surface tension and the antibacterial advantages contingent on synergism and the reduced likelihood of drug-fast infection. Clinical experience of more than two years has shown antibiotic aerosol therapy to be a valuable supplement to parenteral treatment of respiratory disease, including intrinsic infectious asthma, bronchitis,

bronchiectasis, sinusitis and, more recently, tuberculosis. Except in selected cases, aerosol therapy should be attempted before there is resort to surgery. Case histories are given to demonstrate the therapeutic effect of aerosol therapy.

Public Health Reports, Washington, D. C.

62:1591-1628 (Nov. 7) 1947

Tuberculosis Case-Finding Survey of Total Population of Reykjavik, Iceland, in 1945. S. Sigurdsson and O. P. Hjaltested.—p. 1593.
Geographic Distribution of Histoplasmin and Tuberculin Reactors Among Ohio State University Freshmen and Student Nurses Training in Columbus, Ohio Hospitals. J. A. Prior and Margaret F. Allen.—p. 1608.

62:1629-1656 (Nov. 14) 1947

Role of Health Education in Public Health Program. M. Derryberry.—p. 1629.
Naturally Occurring Histoplasmosis in *Mus Musculus* and *Rattus Norvegicus*. C. W. Emmons, J. A. Bell and B. J. Olson.—p. 1642.

62:1657-1680 (Nov. 21) 1947

Opportunities for Public Health in Disability Insurance Programs. M. I. Roemer.—p. 1657.

Review of Gastroenterology, New York

14:755-826 (Nov.) 1947

*Emptying of Normal Stomach in Altitudes. W. Nimch.—p. 763.
Jaundice. R. Upham.—p. 775.
Proctological Manifestations in Systemic Disease. S. Schapiro and J. E. Astrachan.—p. 786.
Linitis Plastica with Total Gastrectomy. M. J. Matzner.—p. 800.

Emptying of Stomach at High Altitudes.—Nimch says that since he began to practice medicine in México, D. F., Mexico, more than twenty years ago, he noted during radiologic examinations that the emptying time of the stomach in normal persons is decidedly retarded in comparison with that estimated as normal and is different from that observed at lower altitudes. This observation and corroborating statements by others induced the author to study the causes of this phenomenon. He arrives at the conclusion that anoxia and the type of food are the most important factors that cause the retardation of the emptying of the normal stomach at high altitudes; the first by vagospastic and pylorospastic action and the second by chemical and mechanical action of the fats and condiments taken.

Southern Surgeon, Atlanta, Ga.

13:777-840 (Nov.) 1947

Segmental Pulmonary Resection for Bronchiectasis. R. H. Overholt and F. M. Woods.—p. 777.
Management of Ununited Fracture. J. O. Rankin.—p. 785.
An Analysis of 1,100 Consecutive Thyroidectomies. R. B. McKnight.—p. 810.
Abuse of Pelvic Surgery in the Female. N. F. Miller.—p. 821.
*Hidradenomas of Vulva: Report of 4 Cases with an Evaluation of Them in Light of Analogous Breast Lesions. J. A. Cunningham and J. Hardy.—p. 831.

Hidradenomas of Vulva.—Cunningham and Hardy report 4 women with sweat gland tumors of the vulva and review the literature on this problem. To date about 80 cases have been recorded. Despite this paucity of reported cases, these are the tumors most commonly encountered in the vulva. Of 5 vulval tumors observed by the authors, 4 were of sweat gland origin. Small tumors are usually situated subjacent to the epidermis and appear as small cystic, elevated nodules. With an increase in size, the overlying epidermis may ulcerate, with eventration of the papillary contents of the cysts. These tumors are seen as fungoid or filiform reddish masses. Microscopically, the picture is usually that of an intracystic papillary tumor. Usually the tumors are discovered incidentally during routine physical examination and present no symptoms. Occasionally the patient notes a mass or complains of spotting of the undergarments by blood or secretion. As a rule these lesions are clinically benign. Only 3 of the 80 cases recorded have shown malignant characteristics. The authors consider these lesions analogous to the intraductal tumors of the breast. The basis for this belief rests on embryologic considerations, parallelism of clinical behavior and the morphologic similarity of the lesions. In the fetus a milk line develops which extends from the axilla to the groin. This is a manifestation of human phylogenetic evolution, and in our mammalian relatives breasts develop all along this line.

Texas State Journal of Medicine, Fort Worth

43:417-478 (Nov.) 1947

Control of Tuberculosis Among College Students in Texas: With Report of Photofluorographic Survey of Student Body of University of Texas. J. E. Johnson.—p. 424.
Thoracic Surgery: Its Present Scope. H. D. Adams.—p. 430.
Army Postgraduate Surgical Training Program. W. G. Stuck.—p. 436.
Recent Advances in Treatment of Leukemias and Lymphomas. R. A. Hettig.—p. 439.
Sodium Citrate in Treatment of Lead Encephalopathy. E. E. Wilkinson.—p. 442.
Löfller's Syndrome: Report of Case in Infant. G. T. O'Byrne.—p. 446.
Early Diagnosis of Carcinoma of Uterus—Physician's Responsibility. H. O. Jones.—p. 449.
Radiation Treatment of Cancer of Cervix. G. Turner.—p. 452.
Roentgen Therapy for Lymphoid Hyperplasia of Nasopharynx. E. E. Seedorf and E. D. McKay.—p. 457.
Dacryocystorhinostomy. H. M. Block.—p. 462.

West Virginia Medical Journal, Charleston

43:359-382 (Nov.) 1947

Curious Types of Abdominal Pain. W. C. Alvarez.—p. 359.
Chronic Urinary Tract Infection in Children. E. W. Kirby Jr.—p. 365.
Rectal Dilator in Perineal Repair. A. P. Hudgins.—p. 370.
*Diagnosis and Treatment of Acute Coronary Diseases. A. M. Master.—p. 372.

43:383-434 (Dec.) 1947

Rupture of Pregnant Uterus. G. W. Easley, F. J. Burian and R. T. Rapp.—p. 383.
Congenital Bowel Obstruction in Newborn: Report of Case. W. W. Scott and J. N. Jarrett.—p. 389.
Effects of Atom Bomb Radiation on Human Body. G. M. Lyon.—p. 391.
Oxygen Therapy. J. F. Morris.—p. 395.
Tetanus in Kanawha Valley Treated in Charleston, West Virginia Hospitals. S. L. Schreiber.—p. 398.

Coronary Diseases.—Although it is known that diseases of the heart are by far the most frequent causes of death, it is not generally appreciated that acute coronary artery diseases alone, with the possible exception of cancer, cause more fatalities than any other disease. There are two chief acute coronary artery diseases, (1) acute coronary insufficiency and (2) acute coronary occlusion. Master gives particular attention to acute coronary insufficiency, which greatly varies in severity. An episode may be associated with exertion, trauma, excitement and emotion, extremes of heat and cold, infection, excessive simultaneous use of tobacco, alcohol and food. It may be a consequence of operation, anesthesia, anoxemia of many types, carbon monoxide poisoning, acute hemorrhage, hypotension, hypothyroidism, hypoglycemia or adrenalin. It may result from status asthmaticus or from pulmonary infarction and embolization; it may occur reflexly from disturbances in the abdominal viscera. Prognosis of this condition is generally favorable, provided the precipitating factors are removed. The favorable prognosis of acute coronary insufficiency is in contrast to that of coronary occlusion, which occurs fortuitously; it may take place any time or anywhere and is not related to effort and excitement. It most frequently takes place during sleep and rest. The symptoms are crushing, substernal pain (not relieved by glyceryl trinitrate), nausea, vomiting, shock, fall in blood pressure, change in heart sounds, gallop rhythm, fever, leukocytosis and increased sedimentation rate. The illness is prolonged, and permanent changes in the heart usually ensue. At autopsy the coronary artery is completely closed by a thrombus, which is formed directly on an intimal plaque or originates from an intimal hemorrhage that has broken through the intimal lining. A hematoma within the intima may cause complete obstruction of the lumen without thrombosis. Treatment of acute coronary occlusion should be directed toward relieving the patient's symptoms. Drastic measures are contraindicated.

Yale Journal of Biology and Medicine, New Haven

20:1-134 (Oct.) 1947

Experimental Attempts to Transmit Infectious Mononucleosis to Man. A. S. Evans.—p. 19.
Studies of Carbohydrate-Lipoid Complex from Human Strain Tubercle Bacillus H 37. G. V. Kropp and C. Floyd.—p. 27.
Quantitative Coagulase and Toxin Production by Staphylococci in Relation to Clinical Source of Organisms. M. Tager and H. B. Hales.—p. 41.
Mortality in Socio-Economic Districts of New Haven. C. Sheps and J. H. Watkins.—p. 51.
Standardization of Complement Fixation Reaction with Chicken Serum as Complement. Barbara K. Watson.—p. 81.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

59:367-406 (Nov.) 1947

- Production of Dermatitis By Pyrethrum and Attempts to Produce a Non-Irritant Extract. K. A. Lord and C. G. Johnson.—p. 367.
Incontinentia Pigmenti. F. Kaly and Eleanor Mackenzie.—p. 375.
Note on Milker's Nodules. H. J. Wallace.—p. 379.

British Journal of Ophthalmology, London

31:649-712 (Nov.) 1947

- Consideration of Aniridia, with a Pedigree. P. H. Beattie.—p. 649.
Induction of Experimental Tumor of Lens. Ida Mann.—p. 676.
Xanthelasmata and Autonomic Nervous System: New Syndrome. A. Bakker.—p. 686.
Case of Bilateral Coloboma of Optic Disc. H. L. Hughes.—p. 689.
Case of Pseudo-Glaucoma. J. A. Magnus.—p. 692.
Case of an Adenoma Arising in Sweat Gland of Upper Eyelid. F. Clifton and W. H. Gordon.—p. 697.
An Unusual Case of Symmetrical, Bilateral, Non-Traumatic Iris Prolapse. M. L. Nairac.—p. 700.
Contracted Socket: Splint Method of Post-Operative Control. F. M. Lyons.—p. 703.

British Journal of Radiology, London

20:441-488 (Nov.) 1947

- Carcinoma of Bronchus with Especial Reference to Its Treatment by Radiotherapy. L. M. Shervon.—p. 443.
Inhibition of Ribon- and Thymo-Nucleic Acid Synthesis in Tumor Tissue by Irradiation with X-Rays. Barbara E. Holmes.—p. 450.
Physical Aspects of Intracavitary Radium Treatment of Carcinoma of Cervix Uteri: III. New Applicator. G. J. Neary.—p. 454.
Melorheostosis and Creeping Periosteal Form of Leontiasis: Report of Case of Osteitis in a Rib Showing Apparently Connecting Link Between These Two Lesions. H. R. Sear.—p. 470.
Technic for Cerebral Angiography. R. H. Boardman and A. A. Vickers.—p. 474.
Report of 6 Cases of Coxa Magna Following Synovitis of Hip Joint. B. McMurray.—p. 477.
Tendinitis of Flexor Carpi Ulnaris. J. W. Winchester and E. C. Mekie.—p. 482.
Importance of Fluorescopy in Investigation of Sinus Tracts of Thorax. T. R. Riley.—p. 483.

Intracavitary Radium Treatment of Carcinoma of Cervix.—Neary describes a new applicator for the treatment of carcinoma of the cervix uteri. Without exceeding the local doses normally arising in conventional techniques, a more than twofold improvement in the dose at the pelvic wall (5,000 r) is achieved. The predetermined radiation field cannot change during treatment, and it is maintained in correct relationship to the bony pelvis. The radium sources consist of 70 mg. in the uterus and two units of 140 mg. each in the vagina on the midline. The treatment time is seventy-two hours, leading to a total of 25,000 milligram-hours. Drastic modification of the distribution of radiation is brought about by massive platinum screens. The design of this applicator is not regarded as necessarily final or universally applicable. It has been found desirable to modify the uterine tube. The wider importance of the principle of screening for obtaining special dose distributions is stressed.

British Medical Journal, London

2:759-806 (Nov. 15) 1947

- Thiouracil in Toxic Goiter: Review of Four Years' Experience. H. Cookson and F. H. Staines.—p. 759.
Malnutrition of Nervous System. W. R. Brain.—p. 763.
Biochemical Applications of Stable and Radioactive Isotopes. A. S. McFarlane.—p. 766.
Diabetes Insipidus and Uterine Atony: Case Observed Over Period of Twenty-Six Years. G. Marañón.—p. 769.
Nephritis in Textile Workers. R. Platt.—p. 771.

Malnutrition of Nervous System.—According to Brain it is often difficult to distinguish between intoxication and a deficiency. He discusses beriberi, Wernicke's encephalopathy, pellagra, war neuropathy and myasthenic syndrome. In the past there was a tendency to think that describing a disorder as toxic explained it, but it was only ignorance of the finer processes of the metabolism of the neurone that forced physicians to be content with such vague conceptions as intoxication and toxic polyneuritis. A normal constituent of food may be toxic only in the presence of vitamin deficiency or other deficiency—

e.g., maize in pellagra. Lathyrism gives rise to a spastic paraplegia. Denny-Brown believes that lathyrism has not been proved experimentally to be due to Lathyrus sativus and suggests that flour made from this pea may be deficient in tryptophan and that this may neutralize the action of a vitamin, the consumption of lathyrus thus bearing the same causal relation to lathyrism that the consumption of maize or cassava does to pellagra. Maize is toxic only in the sense that it leads to a tissue deficiency of nicotinic acid, and it might be considered that the crucial question is the state of the nervous system. Even in this instance the distinction between intoxication and deficiency is not clearcut. The author concludes that all that has been learned about malnutrition should prove that whatever happens to the nervous system will need increasingly to be considered from the standpoint not only of morbid anatomy but also of the chemistry of the nerve cell.

Nephritis in Textile Workers.—Platt points out that in an earlier issue of the *British Medical Journal* an article on oxygen poisoning contained the statement that "the inhalation of textile dusts is a steady source of death from nephritis and a group of conditions whose common factor is hyperpiesia." The data analyzed suggest that deaths from so-called nephritis in textile workers are in all probability due to hypertension and can be as easily explained by natural variations in the genetic constitution of an inbred population as they can by environmental influences. This should be borne in mind before making the assumption that such deaths are due to "the inhalation of textile dusts."

2:807-854 (Nov. 22) 1947

- Sherrington's Impact on Neurophysiology. J. F. Fulton.—p. 807.
Sherrington—The Man. T. G. Brown.—p. 810.
Sherrington as Philosopher. A. D. Ritchie.—p. 812.
Metabolic Disturbances After Injury. J. Beattie.—p. 813.
Synchronous Combined Total Gastrectomy. J. B. Hume and G. Blackburn.—p. 817.
Effect of Penicillin on Bacterial Flora of Mouth. D. A. Long.—p. 819.
Calculation of Tuxford's Index by Graphical Methods. H. Campbell.—p. 821.

Metabolic Disturbances After Injury.—Beattie directs attention to an increase in the urinary nitrogen output following fractures in experimental animals and in well nourished human subjects. Poorly nourished persons do not show this response, at least not to the same extent as do well nourished persons. At least three factors condition the magnitude of increased nitrogen output in the "katabolic" phase—immobilization in bed, the severity of the injury and the nutritional state of the person at the time of injury. The urinary nitrogen output increases to reach a peak by the end of the first week after injury. The high nitrogen output may be diminished but not abolished by high protein diets. It has been shown that the urine during the period of high nitrogen output contains large quantities of corticosteroid material presumably derived from the adrenal cortex. After injury the body requirement for ascorbic acid (vitamin C) is apparently greater. Some of the increased demand may be due to an increased utilization in the adrenal cortex and the liver and some to the needs of the tissues at the site of injury. The increase in calcium output in the urine after injury is a potential danger, as insoluble calcium phosphate may be precipitated, leading to the formation of calculi.

Journal of Neurol., Neurosurg. & Psychiatry, London

10:93-140 (Aug.) 1947

- Encephalotrigeminal Anesthesia (Sturge-Weber) Without Roentgenologically Detectable Abnormalities: Anatomoclinical Study. C. Haemmerlin and L. Bogaert.—p. 93.
Diverticulum of Lateral Ventricle Extending Into Posterior Cranial Fossa: Report of Case Successfully Relieved by Operation. W. V. MacFarlane and M. A. Falconer.—p. 101.
Case of Musicogenic Epilepsy. D. Shaw and D. Hill.—p. 107.
Electrical Aids in Prognosis of Nerve Injuries. H. W. Newman and W. K. Livingston.—p. 118.
Electromyograms in Muscular Disorders. E. Kugelberg.—p. 122.
Cerebral Responses to Electrical Stimulation of Peripheral Nerve in Man. G. D. Dawson.—p. 137.

Musicogenic Epilepsy.—Shaw and Hill assert that examples of epilepsy induced by musical sounds are clinical rarities, the most comprehensive review citing only 20 cases, some of which were not definitely established. The authors present the case of a woman, aged 44, in whom extensive clini-

cal investigations failed to reveal an acquired cerebral lesion, although the fit pattern, optokinetic response and interseizure electroencephalogram indicated an epileptogenic area in the left temporal lobe. The patient experienced increases of blood pressure, heart rate and respiration while listening to music. Fits could not be induced by pure tones, although the patient felt emotional to a tone of 512 cycles which persisted and was varied in loudness. Different kinds of music were invariably followed by a fit within five minutes. Electroencephalographic studies showed a constant pattern for the development of the fit. No change of rhythm was seen while music was played before the fit began. The cortical discharge began six or seven seconds after the clinical onset.

Lancet, London

2:709-744 (Nov. 15) 1947

Health of Authors. H. Nicolson.—p. 709.

*Prefrontal Leukotomy and Depersonalization Syndrome. H. J. Shorvon.—p. 714.

Effect of Stilbestrol on Mouse Tumors. R. J. Ludford and L. Dmochowski.—p. 718.

Auscultation in Acute Abdominal Disease. C. G. Rob.—p. 720.

Rupture of Rectus Abdominis Muscle During Pregnancy: Report of 2 Cases. Joyce Morgan.—p. 721.

Fatal Hemorrhage in Aberrant Lung Tissue: Report of Case. F. D. Hart and A. C. Jones.—p. 722.

Prefrontal Leukotomy and Depersonalization.—Shorvon states that the distressing symptom of unreality both in self (depersonalization) and surroundings (derealization) can arise in the early stages of all neuroses and psychoses and in some organic conditions, but there are also patients in whom depersonalization is fundamental, the predominant and presenting symptom, existing almost alone as a clinical entity. Since a diminution in preoccupation with self and awareness of self is a frequent result of leukotomy, Shorvon thinks that this operation is indicated in intractable cases of the depersonalization syndrome where other methods of treatment have failed. He reports 5 cases of depersonalization syndrome for which prefrontal leukotomy was performed. Four patients lost their symptoms of depersonalization after leukotomy (2 immediately and 2 after several months), and the fifth patient has improved and is still improving.

2:745-780. (Nov. 22) 1947

Pathology of Sudden Death. K. Simpson.—p. 745.

Intracellular Mode of Action of Sulfonamide Derivatives. R. A. Q. O'Meara, P. A. McNally and H. G. Nelson.—p. 747.

*Staphylococcal Pneumonia in Childhood: Pathologic Considerations. K. J. Guthrie and G. L. Montgomery.—p. 752.

The Chronic Paretic. B. H. Kirman.—p. 755.

*Transplantation of Teres Major and Latissimus Dorsi: For Loss of External Rotation at Shoulder. R. B. Zachary.—p. 757.

Staphylococcus Pneumonia in Childhood.—According to Guthrie and Montgomery primary Staphylococcus pneumonia occurs in epidemic and sporadic forms. They observed at necropsy 55 cases of Staphylococcus pneumonia in children, all under the age of 7 years, two thirds of them being less than 6 months old, at the Royal Hospital for Sick Children, Glasgow. In addition one of them investigated in a maternity nursery an outbreak of Staphylococcus infection which included 16 cases of pneumonia. The 55 hospital cases consisted of 45 in which pulmonary consolidation was the outstanding feature and 10 in which the pneumonia was associated with suppurative bronchitis and bronchiolitis; in 2 it was accompanied by acute bronchiectasis and in 3 by pulmonary abscess. Staphylococcus aureus was isolated at necropsy in all the hospital cases, and in a few instances the organism had been obtained also during life from pleural pus and throat and nasal swabs. It was impossible to ascertain in the epidemic in the maternity nursery whether the Staphylococcus alone was responsible for this epidemic or whether it was associated with a mild type of virus influenza. The authors stress that Staphylococcus pneumonia is a grave disease with high mortality, particularly in infants. Pathologic changes vary according to the duration of the disease. The earliest stage is a hemorrhagic exudative reaction simulating the red hepatization of lobar pneumonia, and this is particularly likely to be found in infants. Premature babies have a poor resistance to the Staphylococcus, and in pulmonary infection death may take place with minimal pulmonary reaction, though the lungs contain abundant cocci. In view of the pronounced

sensitivity to penicillin of most strains of Staph. aureus, it appears that penicillin would offer the best chance of controlling the infection. The penicillin treatment can be combined with administration of sulfonamide drugs.

Transplantation of Teres Major and Latissimus Dorsi.—Zachary reports the case of a man, aged 30, who had been wounded by a shell splinter in the right side of the neck and below the angle of the right scapula. Nearly three years after the injury, the deltoid and biceps were working against gravity and weak resistance, but the external rotators of the humerus showed only a flicker of voluntary power. The patient's chief disability was the tendency of the arm to swing toward the chest when he lifted anything in the right hand. Transplantation of the teres major and latissimus dorsi to the outer side of the humerus was resorted to in order to restore external rotation of the arm. The author points out that this operation is a modification of that described by L'Episcopo and makes use of Henry's approach to the back of the humerus. He thinks that the operation described here may have important applications in the reconstructive surgery of the many brachial plexus lesions sustained in the war.

Medical Journal of Australia, Sydney

2:505-532 (Oct. 25) 1947

Present-Day Trends in Psychiatry. J. F. Williams.—p. 505.

Prefrontal Leukotomy. H. M. Birch.—p. 508.

Observations on Psychologic and Psychiatric Problems Encountered in Singapore Prison Camp. O. Poynton.—p. 509.

Prefrontal Leukotomy for Obsessional Neurosis: Report of Case. W. A. Didden.—p. 511.

Four Cases of Prefrontal Leukotomy. K. F. Edwards.—p. 512.

*Septic Sore Throat and Venous Thrombosis. D. Reye.—p. 516.

Acute Friedländer's Bacillus Pneumonia Treated with Streptomycin. C. E. Vickery and J. Gray.—p. 518.

Septic Sore Throat and Venous Thrombosis.—According to Reye sudden extensive thrombosis of veins as distinct from thrombophlebitis is not common. He presents 2 examples of venous thrombosis occurring in children, aged 6 years. In each case the illness began with a sore throat and cervical adenitis, severe orthochromic anemia early in the disease and pronounced neutrophilic leukocytosis. The first case concerned a girl who fourteen days before her admission to hospital had had a sore throat, frequent cough and enlargement of the cervical lymph nodes. Eleven days later she suddenly became pale and her abdomen became swollen. On the following day the pallor and abdominal swelling were more pronounced, and she began to vomit. She was admitted to the hospital at this stage. The red blood cells numbered 2,800,000 per cubic millimeter and the neutrophilic leukocytes 33,000. She was given a transfusion, but her condition did not improve, and she died. All organs were examined histologically, but only in the liver were any significant pathologic changes found. In this organ the entire system of hepatic veins was thrombosed. The rapidity with which death occurred was due solely to the peculiar site of election for thrombosis, since this resulted in rapid necrosis of the liver. In the second case, which concerned a boy, both feet and the distal half of the legs were gangrenous, the condition being more pronounced on the right side. Eight days after his admission spontaneous separation of the right foot occurred at the ankle joint. The right leg was amputated on the following day. Later, part of the left foot separated, but after that the gangrenous process in this leg receded. Were it not for the histologic studies on the amputated leg, it might have been assumed that the tissue necrosis was the result of arterial obstruction rather than of venous occlusion. However, the evidence for venous as against arterial obstruction was clear.

Practitioner, London

159:239-350 (Oct.) 1947. Partial Index

Advances in Medicine. L. Whitby.—p. 239.

Advances in Surgery. L. Rogers.—p. 247.

Advances in Obstetrics and Gynecology. W. Gilliatt.—p. 256.

Advances in Pediatrics. R. S. Illingworth.—p. 261.

Advances in Treatment of Venereal Diseases. G. L. M. McElligott.—p. 284.

Advances in Treatment of Tuberculosis. R. R. Trail.—p. 292.

Advances in Treatment of Blood Diseases. L. S. P. Davidson.—p. 311.

Advances in Gastro-Enterology. W. I. Card.—p. 320.

Advances in Chemotherapy. F. R. Selbie.—p. 326.

Acta Clinica Belgica, Brussels

2:261-363 (July-Aug.) 1947

- Early Treatment of Cerebral Hemorrhage and Encephalomalacia. J. Roskam.—p. 261.
Prognosis in Suppurations of Lung. H. Durieu and T. de Clercq.—p. 278.
Treatment of Functional Dyspnea by Medicated Aerosols, Pneumodilators, Expectorants and Cardiotonics. R. Charlier.—p. 313.
Basophil Stippling of Erythrocytes in Hyperthyroidism. A. Noret.—p. 334.

Basophil Stippling of Erythrocytes in Hyperthyroidism.—Nizet says that certain experimental and clinical observations indicate that the thyroid hormone has a stimulating effect on erythropoiesis. He decided to investigate whether patients with hyperthyroidism show increases in the erythrocytes with basophil stippling, a sign which suggests stimulation of erythropoiesis. A table listing 27 patients shows the results so far obtained. The ratio of stippled cells, observed on the dark field after staining with methylene blue, has been found higher in patients with thyrotoxicosis (4,000 to 40,000 per million) than in normal subjects (0 to 3,000 per million). The author investigated variations in the incidence of erythrocytes with basophil stippling in 11 patients with hyperthyroidism while they were undergoing treatment with various antithyroid substances such as thiourea and thiouracil. It was found that improvement in the hyperthyroid state following treatment was accompanied by a return to the normal level of erythrocytes with basophil stippling. In patients in whom treatment proves inadequate this decrease fails to take place or is extremely slow. The return to normal of basophil stippling is not accompanied by a parallel reduction in the reticulocyte count, which seems to indicate that the two elements differ. The author suggests that basophil stippling may be of value in the diagnosis of thyrotoxicosis.

Klinische Wochenschrift, Heidelberg

24/25:193-256 (Jan. 1 & 15) 1947. Partial Index

- Hemolytic Anemias on Basis of Abnormal Serologic Reactions. L. Heilmeyer, F. Hahn and H. Schuboth.—p. 193.
Regulation of Plasma Proteins: I. Hormone of Suprarenal Cortex and Plasma Protein Bodies. M. Gulzow and H. Pickert.—p. 205.
Investigations on the Newly Formed Serum Albumin in Patients with Edema. H. Herken and H. Renner.—p. 211.
Determination of Prothrombin: Description of New Micromethod That Can be Carried Out at Bedside. J. Jürgens.—p. 216.
Sympathetic Regulation of Serum Phosphatides in Human Subjects. T. Halse.—p. 220.
Cellulose Factor in Dietetic Treatment of Ulcer Patient. F. A. Pezold.—p. 224.
Frequent Observation of Severe Myocarditis During Active Diffuse War Nephritis. H. Bohn and H. Feldmann.—p. 229.
Fever Therapy in Inflammatory Polyneuritis. H. Rosenhagen.—p. 233.

Cellulose in Dietetic Treatment of Ulcer Patients.—Pezold observed that three fourths of the patients with gastric and duodenal ulcer had disturbances in defecation, usually constipation, which frequently antedated the onset of the ulcer symptoms by a year or more. Abdominal palpation usually reveals disturbances in intestinal tonus and motility and roentgenoscopy corroborates these disturbances. Pezold has frequently observed that with the restoration of normal defecation and of normal tonus and motility the ulcer symptoms subside. Roughage (cellulose) is of great importance for the proper functioning of the terminal portions of the intestine. The author warns against a sudden change to a diet that is high in cellulose, particularly in patients who have long received a diet low in roughage. He recommends a gradual widening of the diet. After the patient has become accustomed to fruit and vegetable juices, finely grated raw carrots and apples can be added. Thick soup, gruels and potatoes with milk and eggs are the main constituents of the diet. The bread should be of the whole grain type. Of the vegetables, only the leafy types of the cabbage family and the legumes are omitted, because of their tendency to produce bloating; but other vegetables are given in liberal amounts.

Fever Therapy in Inflammatory Polyneuritis.—Rosenhagen points out that thirty years ago Guillain, Barré and Ströhl separated from the collective concept of polyneuritis those cases which were characterized by favorable course and typical changes in the cerebrospinal fluid; they regarded these

as radiculoneuritides. These patients had flaccid paralysis chiefly of the lower extremities, paresthesias, disturbances in sensitivity and weakening or loss of tendon reflexes. Examination of the cerebrospinal fluid revealed an increase in the protein level. Inflammatory polyneuritides of the Guillain-Barré type are frequently observed after diphtheria and other infectious diseases, as well as after chronic wound infections. The increased incidence of this disorder and the reduced tendency to spontaneous cure that prevails under present conditions made the need for effective treatment more urgent. Since this inflammatory polyneuritis is regarded as an allergic-hyperergic, serous, interstitial inflammation of the nerve root, the author resorted to artificial pyrexia by means of pyrifex (a colon bacillus vaccine). The results of this treatment are excellent with regard not only to the extent of the improvement obtained but also the time required. Improvement was often noticeable during the first week, that is, after from one to three injections of the vaccine. After two or three weeks even the serious cases were improved. The improvement in the neurologic disturbance was accompanied by improvement in the general condition of the patient and in the defense power of the organism (increase in weight and healing of chronic wounds.) Treatment with pyrifex is well tolerated and is less exhausting than is malaria therapy. Prognosis is the more favorable the earlier treatment is begun. The author recommends this treatment on the basis of observations in 16 cases.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:3121-3192 (Nov. 1) 1947. Partial Index

- Surgical Treatment of Pulmonary Tumors. K. Waldeck.—p. 3127.
Polio-myelitis After Vaccination and Injury. A. Verjaal.—p. 3137.
Odontogenic Causes of Trigeminal Neuralgia. B. van Ommen.—p. 3146.

Polio-myelitis After Vaccination and Injury.—Verjaal says that the nasopharynx and, more recently, the intestinal tract have been widely accepted as the probable port of entry of the virus of poliomyelitis. He reports 2 cases which indicate that there is also a possibility of a peripheral port of entry. In a child aged 1 year who was vaccinated on the left shoulder paralysis of the left arm with cerebrospinal fluid abnormalities characteristic for poliomyelitis developed on the fourteenth day after vaccination. The paralysis of the forearm recovered partly, the deltoid paralysis remained. A girl aged 15 contracted poliomyelitis with paralysis of the left leg in the course of a suppurating wound on the lower part of the left leg. After three years the paralysis has greatly diminished; however, the peroneus group lying just underneath the wound is still seriously paretic. Several similar cases have been described in the literature. The wound is usually considered to be the factor affecting the local or general resistance against the poliomyelitis virus. The described observations seem to indicate that the surface of the wound may serve as a port of entrance to the virus.

Nordisk Medicin, Gothenburg

36:2039-2078 (Oct. 10) 1947

Hospitalstidende

- Para-Articular Calcifications in Hypercalcemia: 2 Cases as Result of Overdose with A.T. 10 and Vitamin D. T. Olsen.—p. 2047.
Considerations on Interrelation Between Gastric and Hepatic Disease. K. Raby and O. Wanscher.—p. 2049.

Hygiea

- *Pelger-Huët's Anomaly of Leukocyte Nuclei. False Shifting to Left. E. Jonsson, Lisa Boström and B. Bringel.—p. 2051.
Case of Thyrotoxicosis with Complications. C. G. Bergstrand and S. Björkman.—p. 2057.
Treatment with Nitrogen Mustard Gas in 2 Cases. B. Bjurwill.—p. 2059.
Remarks on Iron Metabolism in Chronic Polyarthritis. O. Lövgren.—p. 2063.

Pelger-Huët's Nuclear Anomaly of Leukocytes. False Shifting to Left.—Jonsson and his associates report 4 cases of this nuclear anomaly seen at Södersjukhus in not much over a year. It is characterized by a discrepancy between the nuclei in the immature form of the leukocytes and the mature structure. The nuclei are short and broad and seem somewhat smaller than normal. The cells with their dark coarse nuclei and abundant acidophilic plasma give the impression of being mature too early. The chromatin is so coherent that the nuclei either remain unsegmented or in only exceptional cases form more

than two segments. The designation "false shift to the left" is suggested for the anomaly. Only dumbbell-shaped and peanut-formed nuclei are pathognomic. Nucleoli were not observed. The sternal punctate shows a typical picture with increased number of myelocytes and metamyelocytes; the contrast between the immature form and the mature structure of the nucleus appears here also. In cases of "full carriers," or true Pelger anomaly, all the leukocytes are of Pelger type; in "partial carriers" there are both normal and Pelger leukocytes. Inheritance is dominant. Examination of seventy-seven relatives of the patients revealed 7 additional cases of the anomaly. Diagnosis of the anomaly is of practical importance.

Praxis, Berne

36:789-802 (Nov. 20) 1947

Roentgenologic Studies on Meckel's Diverticulum. G. Voluter and F. Thévenoz.—p. 789.

Fluorescence Photography for Visualization of Droplets of Sputum Expelled During Speaking and Coughing. J. von Ries.—p. 792.

*Treatment of Migraine with Histamine and Antihistamine Substances. L. Biró.—p. 794.

Histamine and Antihistamine Substances in Migraine.

—Biró felt that histamine desensitization should be effective in cases in which injection of histamine elicits an attack of migraine. Of 30 patients with migraine, 25 responded with an attack of migraine to the subcutaneous injection of 0.01 mg. of histamine, and this attack could be counteracted by the administration of ergotamine tartrate. Biró tried histamine desensitization in the aforementioned 30 patients by injecting histamine every second day in the following doses: 0.0001, 0.0001, 0.0003, 0.0005, 0.0008, 0.001, 0.009 and 0.01 mg. The last dose is never exceeded, but is administered at two day intervals ten times. The 5 patients who had not responded with migraine to the histamine were not benefited by the desensitization. The other 25 patients had severe forms of migraine, which had failed to respond to the customary treatments. Of these 8 remained free from symptoms for two years, and in 12 the desensitization treatment had to be repeated after six months. The repeated desensitization was more effective than the first treatment. Some of the patients, while remaining free from the one-sided headaches, experienced some of the equivalents of migraine, but these usually responded to treatment. The author reports experiences with the new antihistamine substance, "antistin," (2-[N-phenyl-N-benzyl-amino-methyl]-imidazolin). He found this substance as effective as ergotamine tartrate in arresting attacks of migraine in patients in whom such an attack could be elicited by injection of histamine. During periods that are free from attack this substance can be given orally, subcutaneously, intramuscularly and even intravenously. It causes no secondary effects even when continued for three weeks. Of 11 patients treated 9 remained free from attacks, and in the other 2 the attacks became less frequent.

Presse Médicale, Paris

55:789-800 (Nov. 22) 1947

*Transient Peritonitis Associated with Ascites and Eosinophilia. L. Laederich and H. Mamou.—p. 789.

Considerations on Use of Dicumarol (Anathrombase) in Cases of Postoperative Thrombophlebitis. J. N. Muller and R. Gandar.—p. 790.

*Epidemic of Cholera. A. P.—p. 791.

Peritonitis with Ascites and Eosinophilia.—Laederich and Mamou report the occurrence of severe, diffuse abdominal pains associated with fever, vomiting and diarrhea in a woman aged 35. This peritoneal syndrome continued for several days and was followed by mild ascites. A tentative diagnosis of tuberculous peritonitis was made, but the cytologic examination of the peritoneal fluid revealed the presence of a considerable number of eosinophilic cells. There was also eosinophilia of the blood and the bone marrow. The abdominal symptoms and the ascites subsided five days later. Inoculation into guinea pigs proved negative. In this case and a second the eosinophilic cells in the peritoneal fluid were partly polymorphonuclear, as were those in the blood, but in addition there was a large number of mononuclear elements of fibroplastic appearance which suggested a local and histocytic origin of the eosinophilia. This variety of tissue eosinophilia is relatively rare and presents a

new aspect of acute ascitic peritonitis which is amenable to treatment. It may be diagnosed erroneously as tuberculous peritonitis, but definite diagnosis can be made with the cytologic examination of the peritoneal fluid, the blood and the bone marrow.

Epidemic of Cholera.—Because of the present epidemic of cholera in Egypt, the French Ministry of Public Health has issued a memorandum to all French practitioners on the prophylaxis of cholera. The clinical picture of the disease and the differential and laboratory diagnosis are discussed and instructions for the isolation of the cholera vibrio are given. With regard to treatment emphasis is put on the considerable aid offered by the sulfonamide compounds. Sulfaguanidine and sulfathiazole, combined with intravenous injections of a 20 to 30 per cent concentrated solution of sodium chloride and with administration of adrenal cortex extract, are effective in combating the disease. Additional symptomatic treatment may be directed at combating dechloruration, the lesions of the intestinal mucosa and deterioration of the general condition.

Revista de la Asociación Méd. Argentina, Buenos Aires

61:661-712 (Sept. 15-30) 1947. Partial Index

*Gelatinous Cancer of Breast. H. Bogetti and P. Fiannaca.—p. 685.

*Bilateral Hypertrophy of Breast in Young Girls: Case. A. E. Nogues.—p. 691.

Gelatinous Cancer of Breast.—Gelatinous (colloid) cancer of breast is, as a rule, painless. The tumor grows slowly for a long time without complications. It is radioresistant and may rapidly change into typical carcinoma and produce metastases. The diagnosis is made on the following findings: (1) pitting of the skin of the breast, (2) the sensation of a viscous substance on palpation of the breast and protrusion of the nipple, which in the majority of cases does not eliminate any secretion. The prognosis is based on the result of histologic examination. Certain types of the tumor become highly malignant and metastasize to the ovaries. The therapy consists of radical mastectomy. A case in a woman 36 years of age is reported.

Hypertrophy of Breast in Child.—A girl 5 years of age had from birth a left breast which was larger than the right. Hypertrophy became pronounced at the age of 3 years and still more at the age of 5. Clinical and laboratory examinations showed that the breast growth was not of ovarian hormone origin. It was found during operation that the growth was a tumor of the estrogenic type. The author believes that in this case the tumor was made up of embryonic tissue which developed into an organoid tumor simulating mammary hypertrophy of very young girls.

Semaine des Hôpitaux de Paris

23:2401-2452 (Oct. 28) 1947

*Method of Puncture Biopsy in Hospital Practice. G. Giraud and P. Cazal.—p. 2401.

Biliary Cirrhosis and Hanot's Disease: Precise Nosology Based on 12 Cases Studied by Puncture Biopsy. G. Giraud and P. Cazal.—p. 2407.

Pleural and Pulmonary Manifestations of Toxic Diphtheria. M. Janbon and J. Chaptal.—p. 2417.

Precise Nosology of Acute Leukoses. P. Cazal and L. Bertrand.—p. 2426.

Aspiration Biopsy.—Giraud and Cazal performed two hundred aspiration biopsies in the medical service of a hospital during the three year period 1944 to 1946. No untoward reaction or accident was observed. A cylinder of tissue is punched out from an organ. In this fragment of tissue the cells retain their histologic relationship, and the fragment may be sectioned in the same manner as any piece of tissue obtained by ordinary biopsy. The method lends itself to the examination of material aspirated from compact organs whose parenchyma is not diffuent, particularly the liver, but also from enlarged kidney, thyroid gland, superficial or deep tumors and bones. Diagnosis in the case of an enlarged liver is particularly aided by aspiration biopsy, which makes it possible to study lesions of the various types of hepatitis, hypertrophic cirrhosis, biliary cirrhosis, pigmentary cirrhosis, cancer of liver and hepatomegaly resulting from pathologic changes in the blood. Aspiration biopsy is also valuable as an aid to prognosis by revealing the extent and gravity of the lesions.

Book Notices

Diagnosis and Treatment of Menstrual Disorders And Sterility. By Charles Macer, M.D., F.A.C.S., Assistant Professor of Gynecology and Obstetrics, Graduate School of Medicine, University of Pennsylvania, Philadelphia, and S. Leon Israel, M.D., F.A.C.S., Instructor in Gynecology and Obstetrics, School of Medicine, University of Pennsylvania. Second edition. Cloth. Price, \$7.50. Pp. 576, with 173 illustrations. Paul B. Hoeber, Inc., 49 East 57th St., New York 16, 1946.

This book was written to help the general practitioner with the diagnosis and treatment of menstrual disorders and sterility. This goal was accomplished so well in the first edition that a revision is timely. In this second edition the contents have been brought up to date. Several new chapters have been added.

The first several chapters of the book are devoted to the anatomy and physiology of the glands of internal secretion which control the reproductive organs and the structures themselves. The various abnormalities of the menstrual function are discussed under such headings as dysmenorrhea, amenorrhea and uterine bleeding. One chapter is devoted to the endocrine aspects of pathology of the breast. Sterility of the male and female are discussed in several chapters.

In general the information presented is sound; however, there is a tendency to exploit the authors' own experiences. This is particularly true in discussions of therapy, where there are many differences of opinion. In spite of these minor criticisms the book is clear and readable and is devoid of much controversial scientific data which would only serve to confuse the general practitioner. The book can be recommended to any one interested in this special field.

The publisher is to be congratulated on the general appearance and format of the book.

Vegetative Funktionen und Zwischenhirn. Von Dr. W. R. Hess, o.B. Prof. der Physiologie an der Universität Zürich, Zürich. Erscheint gleichzeitig als Supplementum IV der *Helv. physiol. acta*. Cloth. Price, 12 Swiss francs. Pp. 65, with illustrations. Benno Schwabe & Co., Klosterberg 27, Basel, [n. d.].

This small book, which appears also as a supplement to the *Helvetica Physiol. Acta*, summarizes Hess's work on diencephalic functions and is based largely on physiological stimulation experiments in the unanesthetized cat. It thereby supplements the work of American authors who under the leadership of Ranson studied this problem in anesthetized animals. Of great interest is Hess's finding that the diencephalon can be subdivided into an anterior area which elicits largely parasympathetic reactions such as fall in blood pressure, constriction of pupil, salivary secretion, emptying of the bladder and rectum, and decrease in respiration and in a posterior sympathetic area causing rise in blood pressure, rate of heart and respiration and pupillary dilatation. These autonomic reactions are associated with changes in excitability of the somatic nervous system, which are diminished by the parasympathetic and increased by the sympathetic area. This somato-autonomic integration seems to be the chief function of the diencephalon. The book is beautifully printed and illustrated. The complete omission of the pertinent literature is to be regretted.

Diseases of Children's Eyes. By James Hamilton Doggart, M.A., M.D., F.R.C.S., Ophthalmic Surgeon, Hospital for Sick Children, Great Ormond St., London. Cloth. Price, \$10. Pp. 288, with 210 illustrations. The C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1947.

The need for a textbook on children's eyes, in English, has been felt for some time. This volume, however, is primarily for the ophthalmologist who treats children, and the great need is for a textbook which the pediatrician would have available to enlighten him, and perhaps the general practitioner, in the specialty of the eye, just as other textbooks have been issued concerning the child's heart, lungs, and other organs.

The author has had much and excellent experience as an expert ophthalmologist in a children's hospital, and the book well illustrates the various difficulties which he has encountered and the methods of overcoming these dysfunctions and diseases. In addition to his own experiences he has drawn heavily on all of the important textbooks published in England concerning all

phases of the eye. Excellent illustrations both in black and white and color have been culled from the works of Wolff, Ida Mann, Sanford Gifford and the superb plates of Hamblin. The chapters, as to the approach to the eyes of infants and children, are well worth the perusal of the ophthalmologist, pediatrician and general physician. The American physician may have some difficulty with the English terminology and references to drugs. The index is complete, and the format leaves little to be desired. The drawings and color pictures by Miss Trotman are numerous and reveal to the full her special talent for eye illustrations.

Buchanan's Manual of Anatomy. Edited by F. Wood Jones, D.Sc., M.Sc., M.B., Sir William Collins Professor of Human and Comparative Anatomy at the Royal College of Surgeons of England, London, assisted by E. L. Patterson, M.D., B.Sc., S. Mothershead, M.D., B.Sc., F.R.C.S., T. E. Barlow, M.D., M.R.C.S., L.R.C.P., F. R. Wilde, M.B., Ch.B., B.Sc., and Jessie Dobson, M.Sc., B.A. Seventh edition. Cloth. Price, \$10. Pp. 1616, with 896 illustrations. William Wood & Co., Mt. Royal & Guilford Aves., Baltimore 2, 1946.

This manual appears to be entirely out of line with the strong current tendencies of publishers as well as teachers to present anatomic material in a highly colorful and artistic fashion. There are numerous drawings which do not serve the purpose for which they have apparently been intended. Some drawings are crude, others are unusually crowded with detail, while still others show evidence of need for factual editing. The presence of a considerable number of radiographs enhances the text, but even here the absence of labels prevents the student from adequately interpreting the plate with any degree of authenticity. The reference to clinical application of anatomic facts is a distinctly desirable and important feature.

The chapters dealing with terminology and development are on the whole desirable and instructive. The chapter on osteology is entirely too extensive for a "manual." The chapters devoted to the description of the upper limb, lower limb, abdomen and thorax are in conformity with the general purpose of the text. The chapters on the nervous system, eye and ear, have more histologic detail than is warranted. The glossary is a valuable addition to the text.

In general, it may be said that the regional system of presentation, which is employed here, is probably more practical for a student in the dissecting laboratory than is the systemic mode of presentation. It is doubtful, however, whether a present day manual should be written on the assumption that the more anatomic detail a student of medicine or a practitioner is exposed to the better a physician he will be. This book may become very useful in the anatomic laboratory in connection with dissection when it is more carefully edited and when the illustrations are brought up to modern standards.

Memoranda on Medical Diseases in Tropical and Sub-Tropical Areas. Great Britain, War Office. Eighth edition. Cloth. Price, 7s. 6d. Pp. 396, with 113 illustrations. His Majesty's Stationery Office, York House, Kingsway, London, W. C. 2, 1946.

This edition has ninety-five pages and seven new plates more than the previous edition (reviewed in *THE JOURNAL* Feb. 27, 1943, p. 712). The volume is intended "as a companion, not as a rival to standard works."

Three sections have been dropped and five new ones added, namely, infective hepatitis, leprosy, nutritional diseases, sulfonamide drugs and tropical eosinophilia. Basic information remains unchanged but there has been extensive revision and many sections have been completely rewritten. This has resulted in the expurgation of much material of the previous edition which was generally considered unacceptable in this country.

The section on arthropod pests, except for some of the flies, has been completely rewritten and an appendix of ten pages is devoted to the various uses of DDT. "Atabrine" has been given due credit for reducing the incidence of blackwater fever and previous large doses of alkali are no longer indicated. The heading "heat stroke" has, at last, been dropped and replaced by "heat effects" which includes prickly heat and sunburn. Hepatic abscess, as such, is gone, but is included where it rightly belongs, as hepatic amebiasis.

In malaria, the exo-erythrocytic phase is barely mentioned. Under "factors governing diagnosis," "the result of examina-

tion of well stained thick or thin blood films" is now in first rather than fourth place. Four pages on suppression and prophylaxis have been added and Ascoli's treatment has, at last, been dropped.

The Russian work on the dry or urban and the moist or rural form of cutaneous leishmaniasis is included. One finds no mention of the newer raticides in plague. Rickettsial diseases have been expanded from fourteen to twenty pages and spruce has been rewritten.

Throughout the book emphasis is placed on prevention and control, and much of the new material reflects the experience of the British in the North African campaign.

Die Chirurgie im Einklang mit dem Leben. Von René Leriche, Professor am Collège de France, Paris. Mit Vorwort und Einführung von Dr. Joachim Beer. [Ins Deutsche übertragen von K. Vöchting.] Cloth. Price, 9 Swiss francs. Pp. 212. Basel: Benno Schwabe & Co., 1946.

René Leriche is one of the most prominent living French surgeons, his life work is devoted to the ideal of coordinating the art and science of surgery with the general physiologic and biologic conceptions originated by such masters as Pasteur and Lister. As early as 1914, Leriche was full of praise for the surgical methods taught by Halsted in Baltimore, methods based on the conviction that surgery can be nothing else but applied biology. Leriche stated more than twenty years ago that the "heroic" times, when the surgeon considered amputations and resections of main organs his pride and accomplishment, were over. He recognized that the experimental work of Claude Bernard applied by the surgeon would lead to entirely different procedures. Instead of crudely removing a diseased organ, the surgeon should endeavor to correct the pathologic process of a tissue by regulating the biologic conditions. Through resection of a sympathetic ganglion or similar operations on the vegetative nervous system, the abnormal blood supply, the disturbed hormonal balance would be reestablished.

Such thoughts sound like prophecies to those who live in an era where resection of the vagus nerve seems to displace the great radical gastric resection in surgical treatment of ulcer patients.

Several years ago Dr. Joachim Beer, a pupil of Leriche when he occupied the chair of the Surgical Department of the University of Strassburg, undertook to publish a number of lectures and essays of his teacher. The book, which appeared in French, was a great success. The compositions are written in a style which avoids technical terms as much as possible, and they are therefore accessible to most of the educated public. The book includes sketches and reminiscences of great scientists with whom Leriche had contact, such as his teacher Antonin Poucet, Halsted, Cushing and others. The German translation, recently published, will find many readers to whom the original was unavailable. An English translation would undoubtedly be warmly received.

Researches on Normal and Defective Colour Vision. By W. D. Wright, A.R.C.S., D.Sc. With a foreword by L. C. Martin, D.Sc., A.R.C.S., D.I.C., Professor of Technical Optics, Imperial College of Science and Technology, London. Cloth. Price, \$10. Pp. 383, with 233 illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1947.

Professor Martin's foreword gives an adequate value of the worth of this work by Wright and his co-workers and is therefore quoted in full: "I greatly appreciate the invitation to contribute a foreword to Dr. Wright's book, though his researches have made his name so well known in the world of Colour that any recommendation from myself is superfluous.

"The book will, of course, remind readers of its predecessor, *Researches in Colour Vision*, by Sir William Abney, a book which brought together descriptions of many lines of inquiry, the results of which have had a most profound influence on subsequent work. Nevertheless, it was realised that the experimental equipment of Abney's time left much to be desired when judged by modern standards, and I was gratified when, in 1926, the Medical Research Council responded with enthusiasm to my suggestion that a new and thorough experimental investigation of the characteristics of both normal and abnormal colour vision should be taken in hand. As Dr. Wright truly remarks in his preface, we owe much to Sir John Parsons and Professor Hartridge in the inception of the work, for experience had

shown that the advice of experienced physiologists in such a borderline subject is indispensable to the physicist, though physics and optics have contributed their characteristic rigour to the experimental methods adopted with such success by Dr. Wright. While the fundamental problems of colour vision are still unsolved, the by-products of these researches are of great technical and scientific importance especially in relation to colour specification and measurement.

"Much still remains to be done in all aspects of this subject, and the pace set by developments in instruments abroad, makes it essential that the financial support (generously accorded hitherto) should be given a fair chance in competition with other laboratories." In the preface, Wright says: "this book should be regarded first and foremost as a record of experimental data, with theoretical discussion and speculation occupying a very secondary position. Although I have no serious doubts about the fundamental correctness of a three-response theory along the lines proposed by Young and Helmholtz, I would prefer at the present time to be somewhat lukewarm and tentative about my espousal of one theory or another. Several novel ideas have been advanced during the past few years and in so far as they act as a 'ferment' from which the enthusiasm to embark on fresh investigations is engendered, they are to be welcomed, yet for myself I believe that more experiments rather than more theories are the primary need. So little is known about so much that the distinction between theory and guesswork is decidedly blurred; in that case discussion about the merits of any particular theory is merely time- and energy-consuming with little to show for it at the end. There is not even the excuse that a research program is difficult to lay out without a theory to serve as a guide, for the number of experiments awaiting experimenters is very great. It may be hoped that this book will serve both as a useful pointer to some of the more profitable lines to be followed and as a stimulus to get on with the job." After a basic discussion of the visual organ and visual processes, the author delves further into visual perception. His own investigation deals with the construction of the colorimetric equipment and a record of the results of experiments with such an equipment. Finally, a classification of defective color vision is restated from the results of his experiments. An index of authors and one of subjects completes the volume. The format is excellent. For those interested in the past and future work on color vision, this volume is the last word.

Pediatric Gynecology. By Goodrich C. Schauffler, A.B., M.D., Assistant Clinical Professor of Obstetrics and Gynecology, University of Oregon Medical School, Portland, Oregon. Second edition. Cloth. Price, \$6. Pp. 380, with 75 illustrations. The Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1947.

Pediatric gynecology is a special field in which neither the pediatrician nor the gynecologist had a special interest prior to the publication of the first edition of this book. The problems of the reproductive organs peculiar to childhood and adolescence were emphasized and brought together in one small volume which met wide approval. The present edition brings the material up to date since the publication of the first edition in 1941.

The book discusses normal anatomic and physiologic changes as the child develops through puberty, adolescence and maturity. There are few pathologic conditions at this period, but they are discussed fully. The functional abnormalities of the reproductive organs are treated intelligently. Perhaps more space could be devoted to the menstrual irregularities associated with adolescence and maturity. The environmental viscera such as the peritoneum, the bladder and the rectum are likewise considered. There are pertinent chapters on the social service and medicolegal aspects of this special field.

The psychologic approach to the small patient, whose confidence may be difficult to obtain, is a real contribution. The author spends considerable time in describing the minutiae of a pelvic examination that will not utterly destroy the child's faith in the physician. The appendix contains a useful table listing the hormonal substances and one containing a list of the agencies interested in child welfare. The book can be recommended to the physician and the specialist who treat the little girl as she grows to maturity.

Lehrbuch der gynäkologischen Diagnostik für Ärzte und Studierende. Von Dr. W. Neuweller, a. o. Professor für Geburtshilfe und Gynäkologie an der Universität Bern. Bern. Sammlung Medizinischer Lehr- und Handbücher für Ärzte und Studierende, III. Band. Cloth. Price, 58 Swiss francs. Pp. 474, with 106 illustrations. Hans Huber, Martinstrasse 9, Bern 16, 1946.

This volume on gynecologic diagnosis, which comes from one of the few European clinics undisturbed by the recent war, is a welcome contribution. Major emphasis is placed on diagnosis in this special field, touching on therapy only to the extent necessary for completeness. The book consists of two parts. The general section discusses history taking, physical examination, instrumental examinations which include all the available methods of establishing a diagnosis and special examinations. Under the latter heading are included visualization and the examination of all the orifices of the reproductive organs and their environmental structures, by such methods as urethroscopy, colposcopy and rectoscopy. The second section is devoted to the various pathologic conditions affecting the pelvic organs, the cellular tissues and peritoneum of the pelvis and the abdominal wall. Each organ and structure is treated as an entity. The diagnosis of each complication is discussed in detail and every symptom and finding is evaluated carefully. The differential diagnosis is included. The text is made more lucid by numerous diagrammatic illustrations of the palpatory findings on vaginal examination as well as numerous gross and microscopic photographs of the involved pathology. There are over four hundred illustrations, sixteen of which are in color. There is a page of key references and a complete index. The publishers have done a good job of printing except for poor reproduction of many of the illustrations. The book can be recommended to students and physicians who can read the German language.

Altérations de la rétine en rapport avec les affections générales. Par Paul Bonnet, professeur de clinique ophtalmologique à la Faculté de Lyon. Lyon. Atlas ophtalmologique, II. Rapport présenté à la Société française d'ophtalmologie le 18 mai 1947. Paper. Price, 1,500 francs. Pp. 252, with 83 illustrations. Masson & Co., 120 Boulevard Saint-Germain Paris 6^e, 1947.

By means of detailed and well documented case reports, the author presents a number of retinal conditions that are probably frequently present but often unobserved in the course of certain general diseases. He has confined his attention mainly to diseases of the blood, diabetes, infectious states and a few other conditions of lesser significance. His comments are worthy of note and should interest the general medical reader as well as the ophthalmologist. The volume is a good companion to its predecessor.

Endoskopie der Harnröhre: Diagnostik und Therapie. Von Dr. Alois Gillingar. Band II, Wiener Beiträge zur Urologie, herausgegeben von Prof. Dr. Richard Uebelhoer. Boards. Price, \$1. Pp. 68, with 38 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; Wilhelm Maudrich, Spitalgasse 1B, Wien IX/2, 1947.

This monograph on urethral endoscopy consists of four chapters. The first chapter is brief and is devoted to a description of endoscopes. The second chapter describes endoscopic examination and treatment of the anterior urethra and constitutes the main body of the work. This is followed by shorter chapters concerning the posterior urethra and female urethra.

The text is clearly and simply written; the colored illustrations are sufficient in number and adequate in detail. The amount and types of local treatment which the author prescribes for lesions of the anterior urethra appear excessive. The book can be recommended for a simple treatise on urethral endoscopy.

Varicose Veins of the Lower Extremity. By Anthony M. Barone, M.D. With a foreword by Geza de Takats, M.D., M.Surg., F.A.C.S., Associate Professor of Surgery, University of Illinois, College of Medicine, Chicago. Paper. Pp. 51, with 10 illustrations. Chicago: The Author, 1945.

This small monograph is an excellent primer and is unique in the way in which the subject is presented. It is profusely illustrated, showing the normal anatomy of the superficial venous system of the lower extremity and the various types of varicosities. Not only varicosities but also complications, such as thrombophlebitis and phlebothrombosis and pulmonary embolism, are considered. The various diagnostic tests are adequately described, both pictorially and by description. The treatment is discussed concisely. This is an excellent book for the practitioner of medicine.

Das Auge als Subjekt: Das Wahrnehmungsbild und seine Prüfung. Von Dozent Dr. Fritz Rössler, Vorstand der Augenabteilung der Krankenkassaklinik "Rudolfstiftung" in Wien. Cloth. Price, \$13.20. Pp. 191, with 122 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; Wilhelm Maudrich, Spitalgasse 1B, Wien IX/2, 1947.

The subject of the physical and physiologic characteristics of the eye have been elucidated since the time of Euler in 1753. The most prodigious work was that of Helmholtz, who laid the ground work for the present author's thesis on the use of the cobalt lamp for the objective study of the refraction of the eye. Helmholtz's work appeared in 1866 with rather crude instruments. Since then, Snellen, Donders and finally Gullstrand have perfected this method.

The author reviews the work of previous authorities and then illustrates by beautiful color plates the results of many years of work with the new cobalt lamp.

Certainly, he has brought to modern perfection this method of retinoscopy. The detailed mathematical formula and concise theoretic conclusions leave little to be desired.

The literature is covered in full with a long bibliography. The index is short but adequate. Too much emphasis cannot be given to the generous number of black and white and colored illustrations. It is questionable that the method described by Rössler will ever "catch on" in other than the Germanic countries, but for those interested in a relatively new twist to the theoretic vagaries of the physical and physiologic phenomenon to be found in the human eye, this small volume is more than adequate.

Building Up a Successful Medical Practice. By Rodolfo V. Guiang, M.D. Paper. Pp. 91. High Grade Press, New York, 1946.

Dr. Guiang's guiding star in writing this book was Dale Carnegie. He says that "every practitioner who does not know how to deal with his patients and his colleagues should master (Mr. Carnegie's) book ('How to Win Friends and Influence People')." He became a convert in the following manner. "Before I knew this way, I had tried several means by which I could be known by the people. I hanged a big signboard in front of my office. I spent some money advertising my name in newspapers, magazines, programs and souvenirs. I attended social gatherings to be seen by people. All of these methods brought me no significant result as that when I looked directly at people, and greeted them with smiles."

As to how to attract patients, he says that when no patients come to him, he visits his relatives or friends. He then says, "If my presence in their house does not invite anybody to consult his complaints, I will try to observe any person in the household who looks sick. If I see a child is pale, I will ask the mother since when did she notice pallor in the child. One question leads to another until the mother will request me to examine him. After the examination, I will advise the mother to bring the child to my office with specimen of his stool. The presence of these friends and relatives in my office increases the number of patients seeking my advice."

There is much more of the same, and some of it is hilarious reading.

Penicillin Therapy Including Streptomycin, Tyrothricin and Other Antibiotic Therapy. By John A. Kolmer, M.S., M.D., Dr.P.H., Professor of Medicine in the School of Medicine and the School of Dentistry, Temple University, Philadelphia. Second edition. Cloth. Price, \$6. Pp. 339, with 27 illustrations. D. Appleton-Century Co., 35 W. 32d St., New York 1, 1947.

This second edition of Dr. Kolmer's book dealing with antibiotics is completely rewritten and enlarged, and much new material has been added. Each chapter contains an adequate and extensive list of references. In this book one can find the results of the treatment of various disorders as they are reported in the literature. It is an excellent reference book and one that can be read with profit by all physicians.

The Health Story in Hawaii. Paper. Pp. 109, with illustrations. Public Health Committee, Chamber of Commerce, Honolulu, 1947.

"The Health Story in Hawaii" is a picture book showing all phases of health on the islands. With no effort to propagandize the booklet presents its story clearly and precisely. The pictures, the charts and the description are well chosen and make for easy reading. A wealth of information is contained in the booklet.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

LITTLE STROKES

To the Editor:—A male patient, aged 71, is asymptomatic except for a moderate hypertension, 168 systolic and 88 diastolic. An extra systole has been found by one physician. While descending from an upper berth about two months ago the patient dropped about 2 feet; he was jarred and had headache for about half a day. Two weeks later he had a sore, stiff, left calf muscle. About one week ago (September 23) he awoke with a headache—most unusual with him—which disappeared after more sleep and breakfast. After breakfast, standing at the sink on a rug, he noticed a heavy sensation in his left foot. Later in the day the leg became "weak," and next day his arm felt "a little weak." His appetite is fine. He had no other symptoms. The episode was called a "slight stroke." He was not confined to bed, as the consultant considered it unnecessary. He has steadily improved, leg symptoms have always been worse than in the arm. Does our diagnosis seem correct? Could symptoms indicate embolism? What treatment is suggested now? Please outline diet and give effect on the patient of coffee, beer and alcoholic drinks now or in the future. Paralysis did not occur, and all reflexes of the patient were normal.

M.D., Nebraska.

ANSWER.—The diagnosis of little stroke appears to be correct. They are due usually to thromboses of small blood vessels. There is no logical treatment. One can give a tablet of "lipoiodine" (ethyl ester of diiodobromic acid) every day, interrupting treatment every two weeks. It is unwise to limit diet or activities or to moderate drinking or smoking. There is no evidence that it helps, and it annoys and depresses the patient. He should be told what is true, namely, that some persons go many years before they have another attack. Most patients do not get hemiplegia but just grow old, forgetful, thin and weak. This is probably one of the commonest ways of ageing. The process has been described in detail by Walter C. Alvarez in *Geriatrics* 1:189-216 (May-June) 1946. He described the care of these patients in the *American Journal of Nursing* 47:169-170 (March) 1947.

POSSIBLE PERIODIC INTESTINAL BLOCKAGE

To the Editor:—A white man aged 54 has chronic congestive heart failure of at least three years' duration from a long-standing hypertensive cardiac disease. The failure is reasonably well controlled by "purodigin" (digitoxin), ammonium chloride, mercurial diuretic and restriction of activity. He receives one injection of a mercurial preparation weekly and averages a loss of about 7 pounds (3 Kg.) per week. He has a poorly functioning gallbladder and a chronically enlarged liver but shows no evidence of impaired hepatic function. For several months he has had attacks of extreme weakness, pallor, profuse sweating, nausea, vomiting, severe abdominal cramps and an urge to defecate. These attacks last up to thirty minutes during which he loses a tremendous amount of fluid from perspiration and has a cold clammy skin, without change in pulse rate or rhythm or fall in blood pressure. The attacks may occur at any time of the day or night without relation to meals. On several occasions he has lost consciousness and convulsive movements have occurred. The cramps have been controlled by antispasmodics but the pallor, sweating and all other symptoms continue to occur. Hypoglycemia has been considered. A blood sugar determination at the end of one episode revealed a level of 110 mg. per hundred cubic centimeters. High carbohydrate feeding at the time of the attack has not been adequately tried because of aversion to food and concurrent vomiting. Normally his appetite is good and he eats well. Intermittent partial obstruction of the small bowel has also been considered. What further studies are suggested for diagnosis?

G. R. McClary, M.D., North Miami, Fla.

ANSWER.—The attacks of severe abdominal cramps with urge to defecate accompanied by nausea, vomiting, profuse sweating, extreme weakness and pallor and even loss of consciousness do not fit the picture of congestive heart failure. One must assume that they have a definite but independent causation, for edema of the intestine is not likely to precipitate such attacks. The best explanation for these episodes is that of periodic intestinal blockage, which should be further considered. What is the abdomen like during the attacks? Is there increased peristalsis? Is there an abdominal mass? What is the intracranial state? It seems likely that the weakness and faintness are secondary rather than part of the central nervous mechanism behind the attacks. It also is unlikely that intra-abdominal embolism or stone in kidney or gallbladder can be blamed. Further study of the gastrointestinal tract itself would seem to be advisable.

RASHES AFTER VACCINATION

To the Editor:—Recently I vaccinated a boy 16 months of age on the left shoulder and obtained positive vaccinia reaction. With the development of the pustule there appeared a reddish streak, ½ inch (1.3 cm.) wide, from the pustule down the outer aspect of the arm and forearm to the base of the thumb, slightly interrupted at the elbow. The cutaneous area of the streak was not pruritic, inflamed or associated with other lesions. After a week, when the scab was forming over the vaccinal lesion, the streak whitened and flakes of epidermis could be rubbed off. The streak lasted about four months without discomfort although treatment was not prescribed. At disappearance there remained a mild maculopapular eruption of eczematoid type on the neck and shoulder areas. What was this lesion? Lymphangitis, eczema or allergic dermatitis appear unlikely. There were no herpetic lesions. Although the character of the lesion was consistent with tinea, I do not believe it was that.

L. V. dos Remedios, M.D., San Luis Obispo, Calif.

ANSWER.—When a vaccination is performed high up on the arm or shoulder, there seems to be less likelihood of the axillary glands swelling than when the inoculation is done near the insertion of the deltoid muscle. When the local reaction is particularly severe, an extensive erythema, cellulitis, erysipelas or lymphangitis may develop. In these conditions the lymphatics of the skin are affected. Had the vaccination been performed some distance below the shoulder with involvement of axillary glands and lymphatic channels the lymphangitis would have occurred on the inner surface of the arm. The case cited is most unusual. It seems likely that the red streak was due to a lymphangitis. The fact that there was peeling of the epidermis is evidence that there had been some inflammation of the skin.

Several different types of generalized rashes may occur after successful vaccination. The commonest of these resembles German measles. When rashes of this kind are seen they frequently appear from seven to ten days after vaccination. If the maculopapular eruption on the neck and shoulders did not occur until four months later, probably it was not related to the vaccination.

FLUORIDE POISONING

To the Editor:—What is the information regarding the length of time of urinary excretion of fluorides in a patient suffering with fluoride poisoning?

M. R. Warden, M.D., Danville, Ill.

ANSWER.—Permanently, because all persons regularly excrete fluorides up to 1 mg. daily. This normal output represents the fluorides commonly present in foods and water. After occupational exposure to fluorides or after their deliberate addition to food or water, an excess urinary output may persist for five weeks or longer after the last intake. The amount of fluorides introduced probably influences the duration of continued excess excretion. Excretion as high as 43 mg. per liter of urine has been reported during the time of occupational intake. Largent (Largent, E. J.: Urinary Fluoride Excretion Among Men Employed in Alkylation Plants Using the Hydrogen Fluoride Process, *J. Indust. Hyg. & Toxicol.* 29:53 [Jan.] 1947) states the present concepts of fluoride entry into human beings in relation to storage and excretion, including the possibility of some elimination in perspiration. That publication includes references to the literature which embrace all recent investigations. One paragraph from the report of Largent is included as pertinent to the query: "In the course of several intermittent periods of observation totaling one hundred and eighty-three days during which fluorides were added to the diet of the subject to the extent of 6 mg. daily, it was estimated that 0.64 Gm. of fluorine had been stored in the subject's tissues. During the control observations that followed, the urinary level of fluoride excretion remained elevated for five weeks; even in the eleventh week of this period of control observations the urinary excretion was 50 per cent greater than the total intake of fluorine in the diet. This strongly suggests that retention of fluorine in the tissues had occurred at this level of fluoride intake."

UNDULANT FEVER IN CHILDREN

To the Editor:—I have never seen a patient with undulant fever under 7 years of age. Is there any cause for this? If this disease is due only to milk why don't babies have it?

E. C. Gaines, M.D., Buffalo Lake, Minn.

ANSWER.—Undulant fever does occur in children under 7 years of age. On the island of Malta, where the disease is prevalent, approximately 43 per cent of the cases reported each year are in children under 5 years of age. Several of the cases occur in babies under 2 years of age. The disease has also been reported in young babies in Mexico.

ELECTROSTATIC BULB LUMINESCENCE

To the Editor:—As a student I attended clinics at Montefiore Hospital, New York, which had a wealth of neurologic patients. Among these was a young French engineer (a graduate in physics at a French university) who was about 30 years of age. This man was, as I remember, a victim of "multiple sclerosis" and was brought in a wheelchair because his legs were chiefly affected. After the case had been presented our instructor remarked that the patient had exhibited a strange and inexplicable faculty. This the patient proceeded to exhibit in a darkened room. Taking an ordinary 40 watt light bulb in his one hand by grasping it at the base, he would rub his cupped hand over the glass portion, whereupon the bulb glowed faintly with a kind of bluish, phosphorescent light. By rubbing more vigorously in a circular direction enough illumination was produced that time could be told by a nonluminous pocket watch and the features of the patient and students present could be faintly but definitely distinguished.

The patient had his sleeves rolled up and his hands were empty save for the light bulb. I do not believe that there was any legerdemain employed, as I am familiar with "magic" and with methods of deception in manipulation, having been vice president of a "Magic Club."

The patient was highly intelligent and well educated scientifically. He repeatedly stated that he was unable to explain the phenomenon and emphatically denied any possible claim to its being a so-called "psychic phenomenon."

The incident arose again in my memory during a recent discussion with other physicians. Is there a satisfactory explanation which is based on known physical facts?

It is needless to add that when we students tried to duplicate the production of light by rubbing the bulb ourselves we were unsuccessful.

M.D., New York.

ANSWER:—The patient at the Montefiore Hospital produced the luminescence in the lamp bulb by the production of static electrification induced on the inside of the bulb, by frictional static rubbed on to the outside by his hand. At the moderately low gas pressures then common in lamps the gas-ionic conductivity was high and the induced charge was carried by the gaseous ions across to the filament and to ground (the patient in this case).

In addition the phenomenon may have been amplified because he was on a presumably rubber-tired wheelchair on which a large static charge might have been acquired. Sufficient data are not submitted to complete the picture of the capacitance effects that thus might have intensified the phenomenon. The writer unscrewed a 60 watt bulb, took it into a dark closet and, when the eyes were somewhat dark-accommodated, held the socket end in one hand and stroked the bulb with the other. A clearly observable luminescent flash resulted—not repeatable, however. On stroking the bulb with a silk handkerchief flashes of longer duration and greater brilliance were produced. This too was not repeatable after a few strokings until the handkerchief was rubbed against wool. Then it was.

Conditions of excessively low humidity greatly assist such effects in cold dry winter weather. The reporting of an unexpected phenomenon of this sort of course is not quantitatively reliable.

The essence of the explanation is electrostatically produced luminescence within the low pressure bulb by external friction under conditions of relatively low humidity.

TREATMENT OF HERPES ZOSTER

To the Editor:—A man aged 65 had herpes zoster involving the left side of the face and scalp thirteen months ago. He still has hyperesthesia and cannot bathe or shave his face. Please give treatment suggestions.

M.D., Texas.

ANSWER:—Postherpetic neuralgia may be difficult to relieve in those cases lasting more than three months. Many drugs have been tried for the relief of such pain. The following treatment is suggested in the order given: (1) application of 1 per cent procaine hydrochloride ointment; (2) application of heat over the involved area; (3) roentgen ray exposures to the geniculate and gasserian ganglions; (4) section of the posterior root of the left trigeminal nerve; and (5) use of morphine and dihydromorphinone hydrochloride in cases in which the foregoing measures have failed.

TREATMENT OF CANCER

To the Editor:—I should like information, references, or advice on the use of trypanosome vaccine in the treatment of cancer.

Robert G. Ward, M.D., Brooklyn.

ANSWER:—There is no conclusive clinical evidence that trypanosome vaccine is useful in the treatment of cancer.

STREPTOCOCCUS CARRIERS

To the Editor:—A man aged 40 had a severe pharyngitis for about a year and since then has shown repeated positive throat smears for streptococci. He has been treated with sulfonamide drugs, penicillin, local applications of silver nitrate and gargles. He has little pain or soreness in the throat and has no tonsils or swelling in the pharynx. I told him that he must be considered a carrier and is potentially dangerous to other persons. He is not sick and seldom has a temperature above 100 F. What treatment is advised?

Thomas H. Meikle, M.D., Troy, Pa.

ANSWER:—Carriers of beta hemolytic streptococci should be examined for all possible foci which might account for persistence of the infection. Tonsils, lymphoid hyperplasia in the pharynx, nose and paranasal sinuses may be suspected. Nose cultures help to differentiate the nasal carriers. Examination of the nose including roentgenologic study of the sinuses is advisable.

Hamburger and Lemon (THE JOURNAL, March 30, 1946, p. 836) report good results in the treatment of streptococcus carriers with calcium penicillin in beeswax and peanut oil, 300,000 units daily for five to seven days. They state that this can be given intramuscularly to most ambulatory carriers in daily 1 cc. doses without interference with normal activities.

Determination of sensitivity of the organism to penicillin seems indicated in the case described, with regulation of the dose of penicillin according to the sensitivity. Injections of 40,000 to 50,000 units of penicillin every three or four-hours intramuscularly should attain more effective blood levels than a single daily dose, and should be continued for five to seven days.

Before undertaking further treatment diagnostic culture should be carried out to determine effectively that beta hemolytic streptococci are present as the cause of the condition.

OVULATION WITHOUT MENSTRUATION

To the Editor:—A normally developed woman aged 19 consulted me for the relief of nausea and vomiting of several weeks' duration. She has been married about one year and has never menstruated in her life. Several sisters have menstruated normally since age 12. Repeated examination revealed a normally progressing pregnancy of slightly more than three months' duration. Have other cases been observed in which pregnancy occurred in spite of primary amenorrhea? Can ovulation occur without subsequent menstruation? Must one assume that this patient had only one ovulation in her life and became pregnant at once?

F. C. Katzenstein, M.D., Salem, Ill.

ANSWER:—This young woman may have been late in developing and this may have been her first ovulation.

One must be sure that the woman is actually pregnant. Tumors must be considered, both uterine and extrauterine, some of which produce positive Friedman reactions, namely hydatidiform mole and chorionic carcinoma. Hematometra must not be overlooked.

Certain ovarian tumors must be considered which are defeminizing or masculinizing and therefore prevent menstruation.

Ovulation, as determined by indirect means such as temperature readings, apparently does occur without menstruation. Many women who menstruate occasionally over a period of months or years do become pregnant. Patients may ovulate but through some defect in the uterus, endometrium or hormone balance they may not menstruate.

In certain lower animals, particularly the rabbit, ovulation occurs with copulation.

BACKACHE AT NIGHT

To the Editor:—An apparently normal, well developed man aged 38 complains of backache which comes on only when he stays in bed. It has been present for the past fifteen years. The pain is in the lumbar area, is sufficient at times to disturb his sleep and disappears within one hour after he gets up. Hard and soft mattresses have been tried without relief. Roentgenograms of the spine reveal no pathologic condition. His posture is good, physical examination reveals essentially normal conditions and his habits are temperate. Please suggest possible causes of the pain.

M.D., New Jersey.

ANSWER:—Backache which is present only or primarily at night, and which disappears within a short time after arising, is almost always caused by a visceral lesion. A duodenal ulcer which is located on the posterior wall of the duodenum in close contact to the spine may be extremely difficult to visualize with barium roentgenograms. Such an ulcer may be the cause of backache such as that described. An excellent test for this, if the ulcer cannot be demonstrated in roentgenographic studies, would be a trial of ulcer management for about ten days. Such management should of course include some type of small feeding, including milk or cream at bedtime.

PAIN FOLLOWING INJURY TO THE TESTICLE

To the Editor:—A coach tells me that he has found a manipulation to relieve the excruciating pain and muscle spasm that follows an injury to the testicles, such as a kick. The manipulation consists of having the subject lie on his abdomen and giving firm, steady pressure on the middle of the back at about the level of the twelfth dorsal or first lumbar vertebra. He says that on several occasions he has used this with almost instant relief to the injured. Can you explain why a person gets instant relief from this manipulation?

M.D., Nebraska.

ANSWER.—No. However, it is true that from a neurologic angle one does occasionally see persons with a peculiar pain referred to various parts of the trunk and extremities that will follow injury to the back. The suggestion has been made at times that a particular nerve may be impinged on and that by pressure over the spine this may be relieved. However, if the testicular pain is caused by a blow to the testicle itself, it does not seem reasonable to think that any manipulation of the spine would have any effect on it.

USE OF HAPAMINE AND THE ANTIHISTAMINIC DRUGS

To the Editor:—Is there any contraindication to the simultaneous use of (1) "hapamine," the histamine-diazopropanate preparation (Parke Davis & Company) and (2) one of the antihistaminic drugs (diphenhydramine ["benadryl"] or tripeleminamine ["pyribenzamine"]) in a case of chronic atopic dermatitis? Would the antihistaminic drug neutralize the "hapamine" and prevent the supposed stimulation and production of the histamine antibodies (immune response) in the body?

William Sloan Lyles, M.D., New York.

ANSWER.—There is no contraindication for the simultaneous use of hapamine and any of the antihistaminic drugs. It is generally believed that the antihistaminic drugs exert their therapeutic effect by competing with histamine for various sites of action on the cell. There is no direct neutralizing effect of histamine. If antibodies are produced as a result of injections of "hapamine" (which is debatable) the use of antihistaminic drugs would not prevent the development of such antibodies.

PRECAUTIONS BEFORE GOING TO LATIN AMERICA

To the Editor:—What prophylactic injections for immunity should be taken prior to a short visit to Havana (three days) and the east coast of Guatemala (two days) by boat?

M.D., San Francisco.

ANSWER.—Before starting your trip you should have a successful vaccination against smallpox. If you already have a scar which is of more than five years' duration, then you should be revaccinated. You should also be immunized against typhoid-paratyphoid fever.

Visitors to the interior of any Latin American nation should consider vaccination against typhus and the possible use of protective medication against malaria.

DANGERS OF THERAPY WITH ESTROGENS

To the Editor:—A recent editorial on the estrogenic treatment of prostatic carcinoma stated that the use of estrogens for treatment of males was not without danger. What are dangers of estrogen therapy in prostatic hypertrophy and carcinoma?

Marks S. Shaine, M.D., New York.

ANSWER.—Anxiety concerning the prolonged administration of estrogen to human males largely stems from experimental studies. In certain strains of mice the estrogens readily evoke cancer of the breast or the interstitial cells of the testis. While treatment with estrogens in women has been implicated in cancer of the breast in only a few cases, any new therapeutic method with such a serious history in laboratory animals must be used with caution for some years.

SALICYLATES NOT USED TO PREVENT THROMBOSIS

To the Editor:—Enough experimental work has been done to demonstrate that if salicylic acid is given to laboratory animals it causes hypothermia and hypocoagulability. Similar action was found in the human subject. Since this action is much like that of "dicumarol," I am interested to learn whether or not any attempt was made to make therapeutic use of salicylates in conditions in which thrombosis is anticipated or is actually present?

Louis Newton, M.D., Bridgeport, Conn.

ANSWER.—As far as is known, no concerted attempt has been made to use salicylates therapeutically to prevent or treat thrombosis in man.

ALLERGY AND STRONTIUM SALICYLATE

To the Editor:—Are there any reported allergic reactions to strontium salicylate?

C. W. Atherton, M.D., Fairview, Ill.

ANSWER.—Allergic reaction to salicylates are not uncommon and consist chiefly of skin rashes associated with itching. The reports generally do not distinguish between strontium salicylate or other salicylates. It is quite certain, however, that those who are allergic to sodium salicylate would also be allergic to strontium salicylate. In this connection it is important to differentiate another type of salicylate allergy. In most instances of allergy to acetylsalicylic acid in which the symptoms are urticaria, asthma or rhinitis, sodium or strontium salicylate can be taken without ill effect.

ASTHMA

To the Editor:—Please discuss the indications for digitalis therapy in a prolonged attack of bronchial asthma.

M.D., West Virginia.

ANSWER.—Digitalis may be indicated in patients with asthma if there is any evidence of cardiac decompensation. This is not common in patients with asthma unless the condition has been severe and of many years' duration, or unless the patient has cardiac disease in addition to the asthma. The normal heart can tolerate many years of severe asthma without signs of decompensation. The usual signs of cardiac decompensation should guide the physician. Moist rales at the bases of the lungs, slight tenderness of the liver on palpation, enlargement of the liver, dependent edema and other signs of fluid retention indicate the usefulness of digitalis therapy.

"RADICAL CAUTERIZATION OF NOSTRILS"

To the Editor:—The reply in *The Journal* of Nov. 8, 1947, page 682, concerning radical cauterization of the nostrils in hay fever stated that "when allergic methods do not produce the desired results one may consider the advisability of employing conservative cauterizing methods, chiefly chemical." In those desperate cases in which there is almost continual sneezing, rhinorrhea and complete blocking of both nasal chambers, these chemicals are of little value and in some instances their application to an already inflamed mucous membrane will cause more irritation. These patients usually have large, pale blue inferior turbinates with redundant mucous membrane. The slightest irritation, whether by pollen, dust, fumes or chemicals, causes the redundant part to swell and block the nasal passages.

In such cases I have employed diathermy cauterization of the inferior turbinates for the past ten years. I use a bipolar turbine needle, which is inserted between the mucous membrane and the turbinate bone for a distance of about 1 inch (2.5 cm.) after the field has been anesthetized with a topical application of 5 per cent cocaine and a submucous infiltration of a 0.5 solution of procaine. The precise amount of tissue to be cauterized can be controlled by adjusting the gap between the parallel poles. In this way the electrocautery is confined to the submucosa. Contraction of the resulting scar pulls the mucous membrane down with it toward the turbinate bone and keeps it there permanently. A unipolar electrode, known as the Beck turbine needle, can also be used. With this needle it is not possible to control the exact amount of cauterization in the tissue surrounding the needle.

Treatments serve a twofold purpose, permanent shrinkage of the mucous membrane and substantial reduction or complete elimination of sneezing by destruction of the ends of afferent nerve fibers, thus raising the threshold for a given stimulus.

I have observed that if one half to two thirds of the anterior portion of the inferior turbinate is treated with electrocautery the sneezing subsides. Three to four treatments are required. If other nasal pathologic conditions exist, they should be corrected.

After treatment in some patients there develops a fever. Routinely I insert a nasal pack saturated in tyrothrycin and have the patient take penicillin by mouth as a prophylaxis. A nasal spray of 0.5 per cent solution of ephedrine is prescribed for home use. In severer cases, 0.5 per cent solution of cocaine is added.

Despite all precautions, the mucous membrane proper occasionally was burned by the electrocautery. In such cases regeneration took place and ill effects were not observed.

I do not agree that radical cauterization may produce such complications as sinusitis or asthma due to the loss of physiologic functions of the nasal tissues. I believe there is far greater danger of producing these conditions by allowing severe hay fever with complete nasal obstructions to continue, after having failed to relieve it through conventional methods. In a series of 150 cases none was made worse, and only in 4 cases was it necessary to resort to other methods, namely roentgen and radium therapy. This was used to control rhinorrhea, as the sneezing had already been reduced and good shrinkage had been obtained with the cautery.

The belief that the use of electrocautery will result in loss of physiologic function of the nasal tissue is founded on an academic premise rather than on practical experience. Certainly no ill effects on the inferior turbinate smell could be produced by the radical cauterization of the inferior turbinate.

Irving E. Kaufman, M.D., Chicago.

